

I have been associated with Chas. T. Main and Chas. T. Main, Inc., for 36 years. Before joining Chas. T. Main I was connected with several machinery manufacturing concerns.

From June, 1902, to October, 1904, with the Stillwell-Bierce and Smith-Vaile Company of Dayton, Ohio, and their successor, the Platt Iron Works Company, as designer of steam and hydraulic machinery.

From October, 1904, to September, 1909, with the Allis-Chalmers Manufacturing Company of Milwaukee, Wisconsin, as designing and estimating engineer in the power department, engineer in charge, and acting manager of the hydraulic [473] department.

Since 1935, I have been a member of the TVA consulting board and have acted as a member of a number of special consulting boards studying and reporting to the TVA on special problems. I was also retained as consultant on the 240,000 kw. Watts Bar steam plant constructed by the TVA and acted as expert on water rights values for the TVA in several cases.

I am personally under contract with the U. S. Army Engineers as consultant in connection with the development of hydroelectric and flood control projects.

For a number of years I have acted as consulting engineer for the Flood Commission of the City of Hartford, Connecticut.

During the past four years my firm designed four large hydroelectric plants for the U. S. Engineers in Kentucky, Tennessee and Missouri. On this work I acted in an advisory capacity. At the present time my firm is designing two large hydroelectric and flood control projects for the same client on the Savannah River in Georgia and the Roanoke River in Virginia. I am acting as consulting engineer to the U. S. Engineers on these projects and in an advisory capacity to my associates who are preparing the plans and specifications.

From 1909 to 1930 I was connected with the design and construction of six hydroelectric plants for the Montana

Power Company, aggregating about 300,000 horsepower.

Since 1912 I have acted in a consulting or advisory [474] capacity for the Georgia Railway and Power Company on five hydroelectric plants, aggregating 180,000 horsepower.

I have also acted as consulting engineer on large hydroelectric developments in Maryland, Georgia, Alabama, Missouri, Washington and California.

During the past 36 years my firm has designed over 50 hydroelectric plants ranging from small plants of a few hundred horsepower to large plants up to 375,000 horsepower capacity. I have personally been connected with every one of these plants, either as consultant to one of my associates or in direct charge.

I have made valuations and appraisals for a variety of purposes, such as financing, accounting, condemnation, damages, taxation and rate cases, purchase and sale of properties. Example of such work carried out by me or under my direct supervision are:

Southern Kraft Corporation—valuation for financing of paper mills in Florida, Alabama, Mississippi, Louisiana, and Arkansas.

Commonwealth of Massachusetts—valuation for condemnation of portions of all industries located on the Ware, Swift and Chicopee Rivers in connection with the diversion of water for water supply purposes.

Tennessee Valley Authority—valuation for condemnation of water rights on the Hiwassee River in North Carolina and [475] Tennessee.

Parsons Paper Company—valuation for taxation of paper mill property in Holyoke, Massachusetts.

Tennessee Eastern Electric Company—valuation for rate base on public utility property in Johnson City and other points in northeastern Tennessee.

Union Water Power Company—valuation for purchase of water rights on Androscoggin River, Maine; again for taxation on the same property; and again at a later date for sale of the same property.

Public Electric Light Company—valuation for purchase of water rights on the Lamoille River in Vermont.

American Woolen Company—valuation for sale of water rights on the Winooski River in Vermont.

Amoskeag Manufacturing Company—valuation for sale of developed water power property on the Merrimack River, Manchester, New Hampshire.

International Hydro-Electric Company—valuation for purchase of 33 water power properties in New York, New Hampshire and Maine.

City of Providence, Rhode Island—valuation for purchase of seven water power plants and privileges in connection with the development of the Scituate Reservoir on the Pawtuxet River, Rhode Island, for water supply purposes.

[476] Q. Mr. Uhl, you spoke of your being president of Chas. T. Main, Inc., and, therefore, will you give us some idea of the size of that organization? A. At the present time it is about 300 people we have on the payroll.

Q. 300? A. Yes. At the present time we have about 300 people on the payroll.

Q. Is your work principally design and construction supervision? A. Our work is principally making working plans and specifications for construction of industries and power plants.

Q. Can you give us some idea of the volume of business now under construction? A. Yes. We have about \$75,000,000 worth of business on our books and in our office at the present time.

Q. During the war what was your organization? A. At one time we had 1,250 on our payroll, mostly on war work.

. . .

[484]

CROSS-EXAMINATION.

By MR. GOLDBERG:

Q. In testifying as to your qualifications, Mr. Uhl, you mentioned a number of companies. You stated that you

made valuation studies with reference to the property of those companies? A. Yes.

Q. Did you also make depreciation studies in connection with the valuation studies? A. In all cases that was done.

Q. And you also stated that Charles T. Main is engaged in construction work primarily; is that right? A. No, sir. I said design work primarily, and supervision of construction.

Q. I see. A. Yes.

Q. I assume that you have working papers that support [485] your Exhibit 28? A. I have a great many of them.

Q. Are they available, or will they be available to staff for the Commission? A. I will be very glad to give you copies if my client says it is the proper thing to do.

Q. Are they in Baltimore? A. No, sir.

Q. Are they in Boston? A. They are in Boston, principally; some of them are here.

. . .

[486]

J. RHOADS FOSTER,

a witness called on behalf of the Respondents, and having been first duly sworn, testified as follows:

DIRECT EXAMINATION.

By MR. SPARKS:

Q. Please give your name and residence. A. My name is J. Rhoads Foster. My place of residence is East Allendale Avenue, Allendale, New Jersey.

Q. What is your occupation? A. I teach public utility economics and regulation in the Graduate School of Business Administration of New York University, and do consultative work for public utilities and government agencies.

Q. What has been your academic training, Dr. Foster? A. One year in James Millikin University, located in De-

catur, Illinois, and a total of six years at the University of Missouri—from 1925 to 1929, inclusive, and again from 1931 to 1933. I studied also at Columbia University and at New York University.

My courses of specialization at the universities were public administration, government; public utility regulation and economics. Public administration was my major field of interest.

At the University of Missouri I was graduate assistant [487] in Public Utility Law for a period of two years; graduate assistant in economics for one year, and Gregory Scholar in Political Science for one year.

At that institution I received the degrees of Bachelor of Arts, Master of Science and Doctor of Philosophy, the latter in 1933.

Q. What has been your teaching experience? A. I taught Government and Economics for two years at Wentworth Military Academy, a junior college in Lexington, Missouri. I was instructor in economics at the University of Missouri for one summer session in 1933. I was instructor in economics at New York University, School of Commerce, Accounts and Finance, for a period of three years—1935 to 1938—on a part-time basis.

Since 1938, I have been a lecturer in the Department of Public Utilities, School of Commerce, and the Graduate School of Business Administration of New York University.

The courses which I have taught in New York University include Public Utility Economics, Commission Policy and Administrative Procedure, Public Utility Law, Public Utility Price Policies and Practices, and Sales Policies and Practices.

Q. What has been your employment? A. During the period from 1929 to 1931, I spent considerable time in the preparation of text-book material [488] in the social sciences, being employed by Stephens College in Columbia, Missouri, for that purpose.

For a very brief time, I was associate director of employment for the State of Missouri.

Thereafter, beginning in October of 1933, I was supervisor of a research bureau in the rate engineer's department, New York Edison Company.

I later was made assistant to the rate engineer and continued in that employment until May of 1937. My work in that connection was rate studies, rate schedule design and studies of special pricing problems.

On May 1st, 1937, I resigned to become Economist to the New Jersey Board of Public Utility Commissioners. I also served as Director of Special Investigations, for that Commission, and continued in the employment of the New Jersey Commission until my resignation in July, 1942.

Q. Dr. Foster, what were your duties as a member of the Staff of the New Jersey Commission? A. My duties were generally in connection with rate, accounting and financial proceedings in which unusual or significant issues were presented for the Board's consideration. Upon request I advised the Board with respect to other questions of regulatory policy or practice.

The largest proportion of my time was spent in consideration of problems of rate regulation.

[489] I mean by "rate regulation" questions concerning reasonableness of the returns to particular utilities as well as questions involving discrimination and form of rate schedules.

I was concerned, generally, with accounting regulation, and was at time in close touch with the work of the accounting division of the Board's staff.

Q. Did you prepare studies of the fair rate of return to public utilities in New Jersey? A. I prepared such studies for nearly all the electric utilities in New Jersey, for several gas, telephone, and water utilities, and for one sewerage company. I prepared such studies periodically for the larger public utilities.

Q. Did you serve as consultant to the Federal Communications Commission in 1938? A. Yes, in 1938 I was, for some months, on leave of absence from the Board as

consultant with the Federal Communications Commission in connection with rate of return studies.

I prepared a draft of the 1938 report of the telephone rate and research department of that Commission which report is entitled, "The Problem of the Rate of Return in Public Utility Regulation with Special Reference to the Long-Lines Department of the American Telephone and Telegraph Company."

I was primarily concerned in this connection with standards of fair return determination and with methods of estimating the replacement cost of capital to public utilities.

[490] Q. Have you been a member of the committee on Corporate Finance of the National Association of Railroad and Utility Commissioners? A. While a member of the staff of the New Jersey Board, I was for several years a member of the Committee on Corporate Finance of the National Association of Railroad and Utility Commissioners. I was chairman of that committee during 1941, and during 1942 prior to my registration from the Board's staff.

In 1940, in connection with that activity, I prepared a study of the relationship between security structure and cost of utility capital.

In 1941 I prepared, with the assistance of others, a general review of regulatory standards for security regulation. Those studies are published in the NARUC proceedings.

Q. As a consultant to the New Jersey Commission, after your resignation as economist, did you develop the provisions with respect to basic rate of return which are a part of the rate adjustment plan applied to New Jersey Power & Light Company by that commission? A. I did. So far as I know this is the only sliding scale agreement in which the basic rate of return is adjusted annually by a formula devised to reflect changes in capitalization rates.

Q. Were you retained during 1944 by the New Jersey

[491] Commission to supervise the preparation of evidence and as its principal witness in a proceeding as to the reasonableness of return to the Electric Department of Jersey Central Power & Light Company? A. I was.

Q. Before what state regulatory commissions have you testified in proceedings with respect to security structures, capitalization rates or the fair return to public utilities?

A. The commissions of Arkansas, New York, and Ohio, and the Securities and Exchange Commission.

Q. Please identify the proceedings in which you were a witness before these regulatory agencies. A. Before

the Arkansas Commission the testimony was on behalf of the Arkansas Power & Light Company in 1944. During 1945 I testified on behalf of the Chillicothe Telephone Company before the Ohio Commission, and on behalf of Kings County Lighting Company before the New York Commission. . . .

A. My appearances before the Securities and Exchange [492] Commission were for Utah Power and Light Company in 1943 and the Long Island and Kings County Lighting Companies in 1945.

Q. What studies or articles have you published? A. The first was a study of public utility franchises in Missouri and the relationship of the short-term franchise to the question of centralization in regulation. That was a study of regulatory method and administrative organization.

I published a pamphlet entitled "The Federal Power Commission and State Jurisdiction," which was an analysis of the appropriate limits of the regulatory jurisdictions of the Federal Power Commission and state commissions.

In 1940 I wrote two articles which were published in a special supplement to the Journal of Commerce, which supplement was concerned with public utility integration under the Holding Company Act.

Also for the Journal of Commerce, I prepared a study of public utility taxation during the war period and a study of public utility valuation and state regulatory policies with respect to fair value determination.

In July, 1944, I wrote an explanation of the New Jersey Rate Adjustment Plan which was published in *Public Utilities Fortnightly*.

Since 1942 I have written the chapter on public utility law in the *Annual Survey of American Law*, published by the New York University School of Law.

[493] Q. Of what professional societies are you a member?

A. I am a member of the American Political Science Association, the American Economic Association, the Technical Valuation Society, and the New York Society of Security Analysts.

Q. Are you familiar, generally, with the organization, operations and financial structure of the Pennsylvania Water & Power Company? A. I am.

Q. Have you made a study to determine what in your opinion is the fair rate of return to Pennsylvania Water & Power Company and the Susquehanna Transmission Company of Maryland? A. I have.

Q. What is the meaning of the term "return"? A. The return of a public utility consists of the net operating revenue, or utility operating income, remaining after payment or deduction of reasonable operating expenses, depreciation and taxes, and before deductions which reflect the periodic return on capital. It is the amount available to meet contractual and other costs of capital.

The "actual return" is the return experienced during an accounting period, as recorded on the basis of acceptable standards of income determination.

The "fair return" is the return established as fair and [494] reasonable by the process of rate regulations; it may be the same as, or either more or less than the actual return which the enterprise has earned.

The fair return to a public utility is a legal or regulatory concept but the establishment of the annual amount which is fair and reasonable in a particular situation depends upon application of economic criteria.

Q. What is the meaning of the term "rate of return"?

A. The rate of return is the percentage ratio of the return, a number of dollars, to some base or principal amount. Under the formula of rate regulation this base is the rate base. The rate of return, therefore, may be understood either as the actual rate of return experienced during an accounting period or as the rate of return allowed or allowable as fair and reasonable.

Q. What is the economic criterion of the fair return to investors? A. The economic criterion is the price of capital or the prospective return which will induce an adequate supply of capital to enter the business upon the most advantageous cost basis.

The price of capital in the case of a given utility is a return adequate to maintain and support its credit and enable it to raise the capital funds necessary for the proper discharge of its public duties.

[495] Investors in a public utility enterprise are entitled to a rate of return equal to that generally being received at the same time on investments in other business undertakings which are attended by corresponding risks and uncertainties.

Q. Do competitive forces determine the price of capital to public utilities? A. Yes, like every other type of business enterprise, public utilities must secure their capital in an intensely competitive capital market. It is for this reason that regulation must provide a return comparable with that being realized generally from investments in other business undertakings attended by corresponding risks and uncertainties.

The measure of the fair return to a regulated utility is the return available to investors from alternative, comparable opportunities for investment.

The price of capital is the result of the choices of investors among all the alternative opportunities for the investment of available capital funds.

Q. Is the return expected by investors a cost of utility capital? A. The prospective return which will induce

investors to make available an adequate supply of capital is an economic cost. Like every other business the public utilities must secure their capital funds in a competitive capital market.

It is proper, therefore, to identify the aims of [496] regulation with the conditions of free workable competition. It is obvious that under regulation a return should be provided comparable with that realized generally in unregulated businesses of similar risk characteristics and that unless such return is made available, capital funds will not be forthcoming.

Therefore, the measure of the fair rate of return to a regulated utility is the return available to investors from alternative opportunities for investment. The cost of capital is the result of the choices of investors among all the alternative opportunities for the commitment of available funds.

[497] Q. How is the price determined? A. The price of capital to a given utility enterprise can only be imputed, on the basis of the best available evidence of investor appraisals. It must be established by a valuation process.

Q. What are the components of the price? A. In an economic sense the components of the price of capital are pure interest, compensation for risk, and compensation for investment management.

Q. What do you mean by pure interest? A. Pure interest is the hypothetical return which would be expected by lenders if the use of capital funds were free of risk. The hypothetical risk-free rate of interest is never separately expressed by marked or contractual rates [498] of interest. Long term investments in United States Government bonds may be as nearly risk free as any available investment, but the yield on government bonds undoubtedly includes some element of compensation for risk, such as the changing purchasing power of the dollar.

Q. What is meant by "compensation for risk"?

A. The second, and commonly the largest, component of the price of capital is compensation for risk.

Risk is a general term used to mean any conditions beyond control of the investor which may tend to reduce the annual compensation to be received by the investor for the use of his funds or may interfere with eventual recovery in a liquid or alternatively useful form.

It is apparent that there are three general classes of risk. Some hazards, such as the probability of loss by fire, may be foreseen; their distribution may be estimated and they may be provided for by insurance.

The probability of other losses, although not insurable, is estimated on the basis of past experience and informed judgment, and are provided for by charges to operating expenses.

The risks which are recurrent, subject to estimate and provided for in operating expenses, need not be provided for in the fair return to the extent that the investor believes that they are fully provided for in expense.

[499] The third class of risk arises from events which are only possible or which may occur at an unpredictable time, with unpredictable effects, or which may never occur. This third type of risk includes those which arise from all the unpredictable improvements in the arts or the technology of providing service.

Examples of the loss of part or all of the invested capital because of changes in the market served, with disappearance of the opportunity to earn a return, are easily found among public utilities.

The risk of loss from possible competition is not appropriately provided for by charges to depreciation expense or insurance.

The supply price includes a premium for the assumption of risk and uncertainty, not to compensate for future losses, which are unknown and unpredictable, but to compensate investors for taking the chances of such loss.

Q. What is the third component of price to which you referred? A. A third component of the price of capital is the compensation required by investors, first, for appraisal of the factors which furnish the basis for choosing between one investment opportunity and another, and second, for the continuing attention and management activity required of owners and investors.

[500] No economic burden is willingly borne without compensation. The burden of making investment choices is substantial; once investments are made there remains the burden of continuing analysis and comparison between the securities held and other investments which might be substituted.

The cost of investment management is least for the relatively risk-free investments and increases with the degree of risk in the investment.

Q. Do all investors in a given company assume the same risks and expect the same rate of return on their invested capital? A. No. The risk present in investment in a particular business enterprise commonly is distributed among the different classes of investors by means of the security structure, in accordance with the varying preferences of investors for security and for income.

The bond holder sacrifices a larger return in exchange for the greater security of his investment provided by the mortgage, and the assurance of income provided by the mortgage and the prior claim on the income which may be available from the business.

The common stockholder is in a residual position with respect to income and the distribution of assets in the event of liquidation. Therefore, he assumes a larger share of the risks inherent in the operation of the business and expects [501] a larger return per dollar of investment as compensation for the chance of loss.

Some investors are precluded by inclination, duty or statute from investing their funds in a risky situation;

others are willing to take the chance of loss for the sake of the chance of a larger gain.

Q. Are market appraisals made by investors in terms of three economic components of the supply price? A. No. Market appraisals of investments are not commonly made separately for riskless interest, compensation for risk and compensation for investment management; instead, they are made primarily by reference to factors which as a matter of business judgment determine the risk present in the investment..

Q. What are the bases of business judgment as to the value of alternative investment opportunities? A. The value of an investment is necessarily the value of the prospective returns, income and principal. All knowledge of a particular investment situation must be derived from past experience, and investment analysis is a process of using past experience as a basis for forecasting the future.

The prime basis of business judgment as to annual income expected from a commitment of capital is the prospective stability or certainty of the income and the security of the principal. The characteristics of the utility and of the [502] market which it serves are pertinent to the question of comparative income stability and security of principal.

Various tests and criteria are applied as an aid to the exercise of business judgment.

Times interest earned and times preferred stock requirements earned are the convenient and most widely used measures of protection of the return on bond and preferred stock investments. It is generally recognized that the stability of return to common stock investments varies, among others, with the proportion of gross income normally available for common dividends, since the impact of fluctuations in gross income is diffused as the proportion normally available for dividends increases.

It is obvious that these measures are not independent of the capital structure. Neither are they independent of

the market characteristics and other characteristics of the enterprise which determine its income producing capacity.

Q. Are there other factors which influence investor appraisals? A. Yes. For instance, dividend policy and practice also influences the rate at which income available for common stocks is capitalized in the market.

A company policy of maintaining, or ability to maintain, a regular dividend rate influences directly investor appraisal of prospective stability of annual income from the investment. [503] Company policy with respect to the division of available income between income paid out as dividends and income retained in the business also is an important factor.

Income prospectively to be received as dividends is capitalized by investors at a lower rate than the same amount of income expected to be retained in the business for the purpose of increasing its productive capacity.

It is obvious that this factor is not wholly independent of the ratio of equity income to gross income.

Q. What is the significance of this factor in relation to the fair return determination? A. There is need for allowance, in the fair return, of a margin to be retained in earned surplus. As a matter of business management and policy a practice of paying out as common dividends all available earnings is imprudent.

Financial stability, the ability to avoid wide fluctuations of dividend rates as a result of changing business conditions, the ability to finance improvements without resorting to the capital markets under unfavorable conditions, all suggest the desirability of a reasonably conservative dividend policy.

Q. Are there still other factors which influence judgment as to the value of investment opportunities? A. Yes, there may be many such factors. The general reputation and investor appeal of the class of industry to [504] which the enterprise belongs is an important consideration. The distinction between businesses with prospects of

growth and expansion and businesses with restricted growth prospects is significant.

The margin of revenue available for return to investors is a factor. The return from investments in enterprises with relatively high operating ratios is relatively vulnerable to the effect of cyclical fluctuations of demands.

Since income and excess profits taxes are based upon income, excess profits and income taxes payable at high rates provide a cushion which is a favorable factor.

Size of the enterprise is another factor, not so much for its own sake, but because of the relationship between size and such characteristics as diversity of demand for service, the prospective stability of income, the marketability of outstanding securities and their legality as investments for fiduciaries and institutions.

The valuation of marketability is in large part independent of the valuation of risk inherent in the enterprise. The existence of an organized market, in which the investment is continually traded and subjected to appraisal provides an advantage which is independent of relative freedom from risk.

Q. How are investors' appraisals expressed or measured? A. The appraisals of opportunities for investment are expressed in the market place by the prices of securities. [505] The market price, however, is determined by both the amount of yield or return expected from the investment and the capitalization rate. The capitalization rate is the ratio of prospective income to the investment upon the basis of which investors are willing to purchase the prospect of income.

Thus, where the prospective income is relatively assured, investors may be willing to purchase a bond at a market price of \$100 in order to be entitled to receive \$2.50 per year.

The capitalization rate of 2.5 per cent exists in view of the security market conditions and the risk present in the particular and alternative investments. Where the em-

ployment of the capital is relatively risky, the return which must be in prospect per dollar of investment is much higher.

Therefore, the measure of investor appraisals is the capitalization rate, or the rate at which investors capitalize the prospective income.

Q. What are the evidences of the capitalization rates existing at any one time in the case of a particular company? A. Yield to maturity at the price at which new or refunding bonds are sold to the public by underwriters is evidence of the capitalization rate which exists in the case of debt capital.

Similarly, the yields to maturity at the prices at which the bonds of an outstanding issue are currently traded in the market are evidence of the capitalization rate.

[506] In the case of preferred stock capital, yield at market price, either the issue price or a subsequent market price, is evidence of the rate at which income prospectively available upon the basis of the particular contract is capitalized. Yield at bid or asked quotation similarly may be evidence of the capitalization rate.

Q. What is the evidence of the equity capitalization rate? A. The percentage ratio of earnings per share to market price per share of common stock, known as the earnings price ratio, is evidence of the rate at which prospective income from a given equity investment is capitalized. The reciprocal price earnings ratio is commonly used by security analysts. It has the disadvantage of a form which does not correspond to the capitalization rate.

Although the earnings price ratio is evidence of the capitalization rate or price of equity capital, its significance and meaning as evidence must be considered in the light of the circumstances.

Q. Why do you say that the earnings price ratio may not be accepted as either the same as, or as a reliable measure of, the equity capitalization rate?

A. Because either the price or the earnings used to establish the earnings price relationship may not be representative of typical investor expectations.

[507] Q. Why do you say that the price component may not be representative? A. When an earnings price ratio is stated as of any given time, it is necessary to use such price as may have been reported for the particular common stock in the recent past. The particular security may be widely distributed, actively traded and exposed to continuous investor appraisal, or it may be closely held, seldom traded and only occasionally a subject of active interest on the part of security analysts. A large block of shares may not be marketable at the price at which small lots are traded. If no sales are reported the earnings price ratio may be stated by bid or asked quotations. If so, the bid or asked quotations may not represent the price at which either a small or a large number of shares could actually be sold.

The market price of a common stock may not be significant for another general reason. The capitalization rate is the ratio of prospective income to the investment which investors are willing to make in order to be entitled to receive the prospective income.

Common stock, however, is continually bought and sold for speculative as well as investment purposes. The prices of securities purchased in anticipation of a short run profit from price appreciation may not reflect in significant degree appraisals of prospective income. It is the essential [508] character of the speculator that he buys because he thinks stocks are going up, not because he thinks they are cheap. Conversely, he sells when he thinks the tide will turn.

When the speculative motive is dominant, either in the market for a particular stock or in the stock market generally, the prices may be unrepresentative of investor appraisals of prospective income.

Q. Why do you say that the earnings component of the earnings price ratio may not be representative? A. The earnings component is commonly stated as the earnings per share during a past accounting period. Income to be received by an investor, and upon the basis of which the opportunity is purchased, is always future income. Past.

income per share is no more than an indication of the income which may be expected in the future.

Therefore, it necessarily follows that the income reported for a past accounting period may be either more or less than the income which in the opinion of investors is to be expected in the future. Reported earnings per share may not represent normal operating and other conditions even for the given past accounting period.

Investors give consideration to the changing conditions which determine the prospects of future income.

Q. Why do you say that reported earnings per share may not represent normal operating and other conditions for the [509] given past accounting period? A. Results of operations are reported to stockholders on the basis of diverse standards of reporting. Significant non-recurring items of revenue, of expense or of charges against income may affect the actual earnings for the year.

For instance, assume that a company refinances its outstanding debt in the amount of \$10,000,000, effective as of July first, substituting 3 per cent for 5 per cent bonds. Unamortized debt discount and expense is applied as a reduction of net taxable income. Interest charges in the amount of \$100,000 during the first half of the year would be a non-recurring burden on income. On the other hand, assuming an income tax rate of 40 per cent, the income tax reduction of \$40,000 also would be non-recurring.

The income statement may or may not include an item in lieu of the tax reduction. Adjustment for non-recurring items is required if the statement of past earnings is to be a significant guide to future prospects and such adjustments are made by security analysts as a matter of course.

Q. When adjustments have been made for non-recurring items, do the earnings experienced during a past accounting period then become a measure of prospective earnings? A. No. They become merely a more useful guide. An informed forecast of future earnings is made with consideration of all the known factors which influence

the trends of [510] revenues and expenses. Market demands may be either expanding or contracting.

General business trends are considered in relation to the prospective cost levels. As an obvious illustration, substantially higher federal income tax rates were expected during 1941. The prospective income upon the basis of which utility common stocks were bought during 1941 did not correspond to the income reported for earlier accounting periods.

Similarly, substantially lower federal income taxes were reasonably expected during the latter part of 1945. The additional earnings afforded by this prospective tax relief tended to be capitalized at that time.

Q. Does this discussion of the earnings price ratio mean that in your opinion the ratio should not be used in connection with fair rate of return determination? A. By no means. I have recognized earnings price ratios as evidence of market appraisals of prospective income. No other type of evidence is available. When used for this purpose earnings price ratios should be expressed in the most significant manner possible; they should be treated as evidence and not as measures of capitalization rates; their meaning and limitations should be understood.

[511] Q. What is the distinction between the capitalization rate and the cost rate to the public utility? A. The price is only a part, although the largest component, of the total cost of capital to the business. The price of capital is established by the general market price of capital and investors' appraisal of the comparative quality and desirability of the alternative investment opportunities.

It is really expressed as the capitalization rate, or the prospective yield rate upon the basis of which the required capital is obtainable in the market.

A margin of cost exists between the yield at the price to the investor and the actual cost rate to the utility. This cost margin consists of the underwriting and selling commissions and the incidental expenses of flotation; it in-

cludes costs necessarily incurred by the utility in placing itself in a position of ability to enter into an advantageous arrangement for capital supply.

Q. Is there a cost of equity capital? A. The assertion is sometimes made that there is no cost of equity capital, but that assertion rests upon a confusion between "cost" and cash disbursement. The contracts with bondholders and with preferred stockholders provide specific yield rates and determine the cost of debt and preferred stock capital. A purpose of these security [512] contracts, the preferences and the protective features which are provided, is to distribute a relatively large share of the risks to the equity investors. The lack of a contractual yield rate does not serve to provide capital at no cost; the residual right to income is accompanied by greater risks and a higher cost rate to the enterprise. If it were otherwise the economic cost of capital could be avoided by the simple expedient of not paying dividends.

All capital could be obtained from equity investors; in the absence of cash disbursements there would be no "cost" and no return allowance would be required.

. . .

Q. Is the cost of capital to a utility enterprise evidence of the fair rate of return, Dr. Foster? A. It is.

Q. What kind of capital cost rate do you include, current or experienced? [513] A. Different kinds of capital cost rates may be recognized as evidence of the rate of return, including original cost, historical cost, experienced cost, and replacement cost.

These different kinds of costs are each evidence of the fair rate of return, although the significance and value of each different kind of evidence depends upon all the facts and circumstances, including the method of rate regulation being followed and the kind of rate base which is fixed for the purpose of the proceeding.

Q. What do you mean by original cost of capital? A. One kind of capital cost is expressed by the cost rates

experienced by the enterprise at the time when commitments of capital were made by the original investors.

In the case of utilities which have grown in size over a long period of years, the existing supply of capital typically was obtained at different times and at different cost levels, as needed to finance new construction. The cost of capital represented by debt obligations is expressed by the ratio of annual interest and amortization requirements—to maturity—to the net proceeds realized by the utility.

The original cost of preferred stock capital also is calculable from accounting records and is the ratio of annual dividends to the net proceeds from original issues of preferred stock capital.

[514] With respect to common stock capital the original cost rate is not calculable from accounting records and may be established only with reference to the income prospects and the alternative investment opportunities existing—and the financing costs experienced—at the time the capital was committed to the business..

Q. What do you mean by historical cost of capital?

A. A second kind of capital cost is expressed by the cost rates actually experienced as at the present date under the contracts for supply of debt and preferred stock capital and the cost determined by the income prospects and the alternative opportunities available to equity investors at the time of the commitment of equity capital.

The historical cost of debt and preferred stock capital is determined from accounting records. Expressed as a rate the historical cost of debt or preferred stock capital is the ratio between the annual requirements and the net proceeds to the enterprise from the issuance of such securities.

The annual requirements are defined to include all the costs of redeeming outstanding securities or eliminating, revising, or consolidating existing contracts in order to give the company access to lower capital costs or more favorable terms.

Therefore, although the historical cost of debt and preferred stock capital is determined from accounting records, [515] the treatment and disposition given to such costs for accounting purposes does not affect their nature or propriety of their recognition and treatment in determining the cost of capital.

Q. What do you mean by experienced cost of capital?

A. This third kind of capital cost is the same as the historical cost of capital with respect to the cost of debt and preferred stock capital, but includes the cost of equity capital at the rate determined by the income prospects and the alternative opportunities currently available to equity investors.

Q. What do you mean by replacement cost of capital?

A. The replacement cost of capital is expressed by the cost rate which would be experienced under current market conditions, reflecting the advantages and disadvantages available to a utility free to replace its capital on the basis of a hypothetical capitalization and financing, without the inclusion of any cost of retiring outstanding securities or eliminating the existing capitalization.

It is obvious that the replacement cost of capital must be imputed or estimated and that the accounting records of the company are not the source of information with respect to this kind of capital cost.

For instance, a continuing provision for amortization of unamortized debt discount and expense experienced in connection [516] with previous financing is not a part of the hypothetical replacement cost of capital.

Q. Do any of these concepts which you have just defined imply the existence of a going concern? A. They all do with a qualification as to original and historical costs of capital.

It is obvious that it is one thing to begin a new enterprise; another to recapitalize an existing one. The new enterprise must organize as a corporation; it must assemble the nucleus of a working organization; provide itself with

production and distribution facilities; design business routines and by degrees train a staff of employees to carry them out.

All of these activities involve costs which do not necessarily reflect themselves in the appraisals of investors.

These different kinds of evidence of the fair rate of return do not include any allowance to cover the costs of establishing a going concern beyond those which are reflected in investor appraisals.

The replacement cost concept is defined here to include the assumption that the enterprise is a going concern but necessary and unavoidable costs are associated with achieving the status of a going concern in a position to obtain capital on the basis of a hypothetical capitalization.

Q. How may going-concern costs become reflected in [517] investors' appraisals? A. Investors will characteristically accept a lower prospective return upon the securities of a going business having a record of successful operation behind it, than upon those of a new establishment which has yet to prove its ability to provide the promised or hoped for compensation for the use of capital supplied to it.

Since original and historical costs of capital reflect investor appraisals at the time of original commitment of capital to the enterprise, they tend to reflect the higher risks of the new enterprise and may, therefore, include some allowance for costs associated with the establishment of the enterprise as a going concern.

Q. You testified that the significance and value of each different kind of evidence depends upon the circumstances, including the method of rate regulation being followed and the kind of rate which is fixed for the purpose of the proceeding.

Why are you of this opinion? A. The amount allowed as a reasonable annual return is the product of both the rate base and the rate of return which is applied to the rate base. Therefore, the reasonable rate of return

cannot be determined independently of the rate-making method and the rate base determination.

If, as a matter of administrative policy, original cost or prudent investment is adopted as the rate base, the rate of [518] return becomes the means by which the desirable flexibility can be maintained and reasonable end results reached.

Regardless of the method of rate regulation adopted by the commission or required by the statute from which its authority is derived, the objective is the determination of a fair rate of return as the number of dollars.

It is the impact of a rate order, the fair return allowance, which is subject to the most searching tests of reasonableness.

Q. As I understand it, you are saying that if a rate of return of, say, six per cent applied to a rate base of \$100 million yields a fair return, the same rate of return applied to a rate base of \$60 million, established by a different method of rate regulation would not yield a reasonable result? A. That is correct. If a return allowance of \$6 million is reasonable, adequate, and not excessive, a return allowance of \$3.6 million cannot be reasonable.

Similarly, if the rate base were fixed at \$150 million by the application of some other regulatory formula, a return allowance of \$9 million would not be reasonable.

The credit position of a company and its ability to attract additional capital depends primarily upon the return allowed, rather than upon either the rate base or the rate of return viewed independently of each other, although the regulatory process may have its own influence upon the cost [519] of capital to the regulated enterprise.

Although the process of rate regulation may not be bound by formulae, the fair return, as the end result, should be reached by a rational process and the result should be subjected to criteria of reasonableness which are based upon a recognition of the purposes of regulation.

Q. In general, what do you believe to be the applicable criteria? A. In my opinion, the general criteria are:

First, upon what basis does the rate making process undertake to encourage and induce the investment of capital in the regulated enterprise, and second, how significantly do the results of the rate making process depart from the alternative opportunities available to investors.

Q. What are the bases upon which the rate making process may seek to induce the investment of capital?

A. One such basis is the allowance of a return equivalent to the hypothetical replacement cost of capital. It may be called the competitive replacement basis.

It would seek to provide the return which is available to invested capital from alternative opportunities having comparable qualities of risk and uncertainty and responsibility for the management of investment.

Prudent investment is the second basis upon which the regulatory process may undertake to induce the investment of [520] capital in public utility enterprises. The theory of this basis is that investors contribute a specific amount of capital—dollars—not any specific property, and that additional capital will be forthcoming if they are permitted to earn a return, on the amount actually contributed, at the rate of return expected when the funds were committed to the enterprise, and that on this social contract additional capital will always be available at currently compensatory rates of return expectation.

Q. Please define the competitive basis more fully.

A. The competitive standard involves the proposition that capital committed to a public utility enterprise is subject to the impact of all the changes which may take place in a dynamic and competitive economic society.

Among these changes are fluctuations in the general level of prices and in the cost of constructing particular production facilities, inflationary or deflationary movement of prices, improvements in technology and changes in the demands for utility service.

Therefore, the competitive return to investors is the product of the rate of return currently expected by in-

vestors, applied to the current costs of replacing the plant facilities.

The rate of return currently expected per dollar of investment is measured by the returns currently available from alternative investments of corresponding risk.

[521] The required capital is the amount necessary to construct a utility plant of "up to date" technological design, capable of supplying the service which is being supplied by the existing plant.

According to the competitive standard, the consumers should pay a return of no more than the cost of replacing the plant with one capable of supplying the same service.

The rate of return which corresponds to the competitive standard is the cost rate which would be experienced if the enterprise were free to replace its capital, on the basis of a new capitalization, without incurring costs to retire outstanding securities or eliminate an existing capitalization.

Past costs associated with a capitalization are "sunk" for the same reason that the past costs of existing plant do not determine prices in a fully competitive society.

A new enterprise would incur the cost of capital which would be determined by the returns expected by investors and the kind of capitalization which prudent management would be free to establish.

Q. Does the competitive basis require consistent determination of the rate base and rate of return? A. Yes, if the return is to correspond to the alternatives currently available to investors, both the capital replacement cost rate and the amount of investment required [522] at current prices to provide the same service must be recognized.

Except by accident, the competitive return would not be fixed by applying a replacement cost rate of return to a prudent investment rate base.

Similarly, a competitive return would not be found by applying a historical cost rate of return to a replacement cost rate base, except by accident.

. . .

Q. Dr. Foster, does the investment basis require a consistent determination of the rate base and rate of return?

A. Yes, if the return is to correspond to the returns expected at the time of the commitment of capital and upon the basis of which the investment was made, it must reflect [523] both the historical cost of capital rate and the amount of the historical investment prudently made.

If the return to investors is to be upon the basis of their past sacrifices, it must be fixed at the rate which corresponds to their expectations when the sacrifice was made.

Therefore, unless by accident, a return fixed by applying a replacement cost rate of return to a prudent investment rate base would not be consistent with the investment cost method of rate making.

Similarly, a return fixed by applying a historical cost rate of return to a replacement cost rate base would not be consistent with the investment cost method.

Q. In your opinion, does the investment cost method of rate regulation have administrative advantages? A. Yes, I believe that the prudent investment method of rate regulation has some administrative advantages.

The needs for information can be supplied in large part by accounting records, assuming they accurately reflect economic facts; an attempt to conform to the competitive standard requires that both the rate base and the rate of return be imputed.

Also, adoption of the investment basis tends to relieve investors of certain risks associated with the capitalization if it is consistently employed as explained above; if not, the [524] administrative advantages may be unfairly gained at the expense of the investor.

Q. You testified that the return allowance is an end result of regulation and that this end result should be subjected to applicable criteria of reasonableness.

You have discussed one such criterion—the basis upon which the rate making process undertakes to induce the investment of capital.

What do you mean by the second criterion, which was "How significantly do the results depart from the alternative opportunities available to investors"? A. Consistent recognition of either the competitive or the investment basis does not necessarily mean that the regulatory purpose of inducing the continued investment of utility capital will be accomplished.

Either method must be adapted to particular circumstances if unreasonable end results are to be avoided.

Either the competitive or the investment standard, however, provides a "conscious design for decision" instead of resting the end result upon "intuition".

A consistent recognition of the investment cost basis might in some circumstances yield results wholly inadequate to attract new capital.

If the cost of constructing capital goods and the price of capital were each to trend sharply upward the return [525] provided by the investment cost method of rate regulation might vary widely from the returns alternatively available to investors.

If construction costs increase at the same time that the price of capital declines, it is obvious that the effect of these movements is counteracting.

Therefore, the result of applying the prudent investment method should be tested against the competitive standard.

Q. Might a consistent recognition of the competitive basis yield unreasonable results in some circumstances?

A. Yes. The competitive standard rigidly applied may yield unreasonable results.

For instance, the most economical capital structure at a given time may conflict with a standard of "conservatism" in security regulation; it may include a proportion of debt in excess of what would be approved either by regulatory authority or by prudent management.

The question may be presented in some instances as to whether or not in view of existing contractual obligations

a return based on the competitive standard will maintain solvency. The regulatory authority cannot lose sight of the public need for continued service but must determine whether solvency is worth maintaining.

The practical necessity of giving consideration to contractual costs, in order to maintain ability to attract [526] required capital, may be even more urgent where a competitive return would not result in bankruptcy but might prevent the payment of preferred dividends.

Q. May the end result of the rate making process be subjected to these criteria regardless of the method employed? A. Yes. Assuming that the process of rate regulation is pragmatic, in the sense that it does not proceed consistently by any method, its results may and should be subjected to the tests presented by the competitive and investment standards.

[527] Q. Have you made a study and reached a conclusion as to the experienced cost of capital to Pennsylvania Water & Power Company as at the present date? A. I have.

Q. In general, how have you proceeded? A. I have made a study of the capitalization rate upon the basis of which Pennsylvania Water might obtain equity capital as at the present time. In doing so I have given primary consideration to the evidence of investors' appraisals of the prospective income from their investments in the Pennsylvania Water common stock. In this connection I have given consideration to the significance and meaning of the earnings price ratios. I have added to the imputed equity capitalization rate a margin for cost of financing in order to state the cost of equity capital to Pennsylvania Water.

I have determined the experienced cost of debt and preferred stock capital by use of data supplied to me by the company from their accounting records. Experienced cost of debt capital is defined for this purpose as the percentage ratio on a sinking fund basis between the annual requirements and the net proceeds to the enterprise.

The annual requirements include all the costs of redeeming outstanding securities or eliminating revising or consolidating existing contracts in order to give the company access to lower capital costs or more favorable terms. Similarly, [528] the experienced cost of preferred stock capital is defined as the ratio between the annual requirements and the net proceeds to the company.

Finally, I have combined these cost rates in order to state the total or overall experienced cost of capital.

Q. In determining the equity capitalization rate, why have you given primary consideration to the evidence of investor's appraisals of the prospective income from their investments in the Pennsylvania Water common stock?

A. Because in my opinion these data provide the most significant evidence. The market prices of the Pennsylvania Water common stock express the composite market judgment of what is necessary and adequate compensation for the risks inherent in this investment.

I believe that, properly interpreted, the results of the collective appraisals are a better guide to administrative action than the opinion or appraisal of any one individual. If an individual should reach a different conclusion, the composite market appraisals would, nevertheless, remain the best evidence of the price at which the particular enterprise could obtain additional supplies of equity capital.

Earnings price ratios are available for other utility common stocks and for industrial and railroad stocks. Some of these may be enterprises of corresponding risks and uncertainties. Some may not. Identification of those which are [529] comparable is necessarily dependent upon analyses and subjective judgment. Therefore, the relationships between the earnings and the prices of other common stocks are considered only for the purpose of aiding in the interpretation of the Pennsylvania Water earnings price ratios.

MR. SPARKS: Mr. Examiner, I have at this time a document entitled "Pennsylvania Water & Power

Company, Experienced Cost of Capital'', containing a chart and six schedules. May this document be marked Exhibit 29 for Identification?

TRIAL EXAMINER: The document may be so marked.

(The document referred to was marked Exhibit No. 29 for Identification.)

By MR. SPARKS:

Q. Doctor, you have before you a folder containing a chart and six schedules, together with notes, which has the general title "Pennsylvania Water & Power Company, Experienced Cost of Capital", and which has been marked for identification as Exhibit 29. I ask you whether this was prepared by you or under your direction? A. It was.

Q. Will you please describe generally the chart with the title "Electric and Electric Combination Utility Earnings-Price Ratios, Mean of Medial Four of Six Ratios and Pennsylvania Water & Power Company"? A. The chart shows two lines which I will call curves. [530] One represents the Pennsylvania Water earnings price ratios monthly from January, 1912, to December, 1945.

The second curve represents a monthly average of the earnings price ratios of six electric and electric combination companies. These six companies are Boston Edison, Commonwealth Edison, Consolidated Edison of New York, Consolidated of Baltimore, Detroit Edison and Pacific Gas and Electric Company. The purpose of the second curve is to provide a standard or background which will aid in analysis of the Pennsylvania Water earnings price ratios.

The panel in the upper half of the chart contains a series of notes with respect to events and circumstances of general and particular interest in connection with the consideration of the earnings price ratio curves.

Q. What are the data shown by the schedule bearing the title "Schedule 1, Pennsylvania Water & Power Company, Monthly Earnings-Price Ratios, January, 1912, to De-

ember, 1945"? A. Schedule 1 is a tabulation of the earnings price ratios which are shown graphically by the solid line on the chart.

Q. Please describe the schedule with the title "Schedule 2, Pennsylvania Water & Power Company, Gross Income, Its Disposition and Income per Share of Common Stock, 1911-1945"? A. Schedule 2 consists of a sheet with 13 columns of [531] data and 13 attached pages of notes. I believe that the titles of the various columns on the tabular sheet are reasonably descriptive.

The principal purpose of the schedule is to show the adjustments made to eliminate from income the effect of non-recurring items and to state, in Column 10, the earnings per share of common stock outstanding at the end of each year. Reported income is adjusted for the effect of non-recurring or extraordinary items of revenue or expense. Adjusted earnings per share, Column 10, are calculated by dividing the equity income, Column 8, by the number of common shares outstanding at the end of each year. Column 9, per cent of gross income available for the common stock, and Column 13, the percentage ratio between common dividends and equity income, are statistical expressions of the comparative position of the Pennsylvania Water common stock.

Q. What was the number of common shares outstanding at the end of each year? A. From 1911 to 1922 inclusive, 84,950 \$100 par common shares were outstanding at the end of each year. At December 31, 1923, the number had been increased to 97,693 and at the end of 1924 to 107,462. This number remained unchanged until 1927 when the \$100 par shares were exchanged for no par shares on the basis of four no par shares for each outstanding \$100 par share. Therefore, 429,848 shares were outstanding at [532] December 31, 1927, and the number has remained unchanged to the present time.

Q. What is the purpose of the adjustments of reported income shown by Schedule 2? A. In buying common

stocks as investments, prospective income and not past income is being purchased. Reported income is useful to the security analyst as an indication of what may be expected in the future. Prospective annual income is not measured by the earnings reported for the latest 12-month period. Prospective income obviously does not include extraordinary items of revenue, expenses or taxes which are not expected to recur or which are expected to recur only during a short future period.

In recent years, reductions of Federal income taxes because of deduction from net taxable income available in connection with refinancing of securities and sales of property have been among the most frequently non-recurring items. The unusual circumstances which bring about a significant reduction of taxes in the particular year are, in general, based upon differences in the accounting treatment of certain items for income tax purposes and for general financial purposes. The adjustments are limited to those typically made by security analysts to state the year's earnings on a so-called normal basis. The work was done by progressing from earlier to later years, on the basis of information currently available [533] from the annual reports of the company to its stockholders and care was taken to avoid the use of information available only at a later date. The adjustments are not forecasts; no attempt is made to anticipate the trend of demand, of prices or other factors from conditions which existed during the year for which income is reported.

The earnings price ratio is the ratio between the current earnings and the current market price of the stock. The capitalization rate represents the relationship between the current market price of the stock and the earnings which investors believe to be in prospect and upon the basis of which they are willing to pay the given price for the opportunity of receiving the hoped for income.

Therefore, the earnings price ratio is evidence of the capitalization rate but may not coincide with the latter.

The adjustment of reported earnings for the effect of non-recurring items, which serves to normalize the earnings for the accounting period, is a step toward improvement in the quality of the earnings price ratios as evidence of the capitalization rate.

Q. Why do you show earnings available per share, as reported, Column 11, for only the years 1931 to 1945, inclusive? A. Beginning with the year 1931, the income statement in the annual report to stockholders included a net income item which, after deduction of preferred dividend requirements, [534] may be considered as reported equity income. Prior to that year, the income statement does not attach a positive label to the amount of net income.

Q. How have you derived Column 13? A. Column 13 is the dividend earnings ratio or the percentage ratio of annual dividends to the earnings available during the year for dividends. For the period from 1914 to 1930 the ratio is derived by dividing Column 10, the adjusted earnings per share, into Column 12, the annual dividend rate as at the end of the year. For the period from 1931 to 1945, inclusive, it is derived by dividing Column 11, the reported earnings per share, into Column 12, the annual dividend rate.

Q. Why do you use reported earnings for this purpose to the extent available? A. Because the reported or actual equity earnings are more pertinent with respect to the ability of the company to pay dividends; an extraordinary operating loss or windfall in a given year affects earned surplus available for dividends.

Q. With earnings per share, shown by Column 10 of Schedule 2, available, what are the further steps which you have taken in calculating the earnings price ratios shown by Schedule 1? A. I recorded the monthly market prices of Pennsylvania Water common stock for the period from August, 1911, to December, 1945, and determined the monthly averages of these [535] prices. Then I stated the earnings per share on a monthly basis by a method which

gives a smooth or gradual transition from the earnings of one year to those of the next. Finally, I divided the earnings per share for each month by the average market price for that month in order to obtain the earnings price ratio for the month.

Q. From what sources did you obtain the market prices of the Pennsylvania Water common stock? A. From the Bank and Quotation Record section of the Commercial and Financial Chronicle for the entire period from 1911 to 1945 and from 1913 to 1927, inclusive, from The Annalist, published by the New York Times. Bid and asked quotations were available from the General Quotation Section of the Bank and Quotations Record from 1911 to and including January, 1928. Thereafter, monthly high and low price and volume of sales on the New York Curb Exchange are reported by the Chronicle. In order to supplement the bid and asked quotations, I recorded the prices on the Baltimore Exchange as reported weekly by The Annalist from 1913 to 1927 inclusive and the prices on the New York Curb Exchange as reported weekly by The Annalist from 1924 to 1927, inclusive.

Q. What prices did you use in computing the earnings price ratios? A. I used sale prices in preference to bid or asked quotations, and where prices were available from more than [536] one securities exchange I used the price from the exchange on which there was currently the larger volume of trading in the particular stock. Prices are not available for the period from August to December, 1914, inclusive, when the stock exchanges were closed. I filled in this gap by interpolating from the July, 1914, and January, 1915, prices. Otherwise the prices used are the average of monthly high and low or bid and asked quotations.

Q. By what method do you state the earnings per share on a monthly basis? A. I assigned the earnings per share for each calendar year to the month of September within that year, thus recognizing the availability of information during the year with respect to the trend of

earnings and investors' anticipation of the results for the year. Then I stated the earnings per share for the intervening eleven months in such manner as to provide a regular progression from September of one year to September of the next year. That is, in stating the earning per share for the month of October, I gave a weight of $11/12$ th to the current year's earnings per share and a weight of $1/12$ th to the earnings of the following year. The weights for November were $10/12$ th and $2/12$ th, and so on until the earnings per share for August were stated by giving a weight of $11/12$ th to the earnings of the current year and $1/12$ th to the earnings of the past year.

[537] Q. You then divided the earnings per share as stated for each month by the average of the market prices for the given month to obtain the earnings price ratios which are shown by Schedule 1 and which are represented by one of the two curves on the chart? A. That is correct.

Q. Referring now to the broken curve shown by the chart in Exhibit marked for identification 29, how did you select the six common stocks represented in this average?

A. It is not a selected group. I desired to use a group of dividend paying common stocks for which monthly sale prices are available and the composition of which did not change during the long period from 1910 to date. The six are substantially all which are available. Addition of the common stock of Southern California Edison was considered, but the outstanding preferred stock with participating rights makes computation of the equity income relatively difficult and the stock was excluded for that reason. A larger group might have been obtained by making substitutions from time to time or varying the number of stocks in the group but chaining of the earnings price ratio averages probably would have been necessary. The six are the most homogeneous group which could have been used for the purpose subject to the conditions stated.

Q. Are the earnings price ratios tabulated on Schedule [538] 3 the values which are represented by the broken curve on the chart? A. That is correct.

Q. Please describe the method by which you arrived at monthly earnings price ratios for the six common stocks shown on Schedule 3.

A. I used the same method and followed the same steps as in connection with the Pennsylvania Water earnings price ratios. I read the annual reports of these six companies for nearly the entire term of years. In the case of certain years, particularly prior to 1911, I did not have the annual reports available and obtained the information from Moody's Manual. In instances where information, such as the dividend rate, was not given in the annual report, it was obtained from Moody's. I worked forward from earlier to later years. I prepared for each company an annual statement of gross income, fixed requirements, equity income and earnings per share, which reflected adjustments made for significant non-recurring items of revenue, expense and taxes. I then stated monthly earnings per share by weighting in the same manner as I did for the purpose of stating monthly the Pennsylvania Water earnings price ratios. The monthly prices of the common stock were obtained from the same sources and treated in the same manner as in the case of the Pennsylvania Water common stock.

Q. Why have you used the mean of a medial group instead [539] of some other kind of average?

A. Exclusion of the extremes in computing the average tends to eliminate the effect of extraordinary factors which have an impact on a particular company and which otherwise would distort the average. The average is more nearly representative of the typical level and trend than it would be if the extremes were included.

Q. Have you made any check as to the stability of the companies represented in the average earnings price ratios, and their comparability with Pennsylvania Water, with respect to the proportion of gross income becoming available to the common stock?

A. Yes, I have determined the proportion of gross income available as equity income for the four companies represented directly in the average

either during all or during the greater part of each of the five years ended with 1922, and similarly, with respect to the five-year period ended in 1940. During the earlier period of five years, the average proportion of gross income available to the equity was 54.6 per cent for the four companies and 54.7 per cent for Pennsylvania Water.

During the five years ended with 1940, the average for the four companies was 58.3 per cent and the average for Pennsylvania Water was 67.8 per cent.

Thus, there is reason to believe that the level of the [540] average is not affected by any long-run change in capital structures or proportion of total income typically available for the equity. The distribution of the Pennsylvania Water gross income did change, with a smaller proportion being required in the later years to meet prior charges so that, in this respect, the Pennsylvania Water stock is less comparable during the later period with the stocks represented in the average than it is during the earlier years.

Q. Does the increase in the proportion of gross income available for the equity mean that the earnings price ratio is higher or lower than would otherwise be the case?

A. So far as the influence of this factor is concerned, the earnings price ratio is lower than would otherwise be the case.

Q. What do you conclude from the fact that Pennsylvania Water common stock has sold during recent years on a higher earnings price ratio basis than the average of the other four? A. It does so for reasons other than the broader participation in income.

Q. Why did you make the comparison for the five years ended with 1922 and the five years ended with 1940? A. A comparison of income distribution, between Pennsylvania Water and the other companies, would be meaningless for almost any year prior to 1918. The proportion of gross income available to the Pennsylvania Water stockholders increased from [541] 8.7 per cent in 1911 to 51.4 per cent

in 1917. It required several years for Pennsylvania Water to reach full utilization of the capacity initially planned. As for the five years ended with 1940, I merely took a period prior to the war.

Q. Have you made any check as to the stability of the companies represented in the average earnings price ratios, and their comparability with Pennsylvania Water, with respect to the proportion of equity income paid out as dividends? A. Yes, I have made a determination of the proportion of equity income paid out as dividends by Pennsylvania Water and by the four companies represented in the average, either during all or during the greater part of each of the five years ended with 1922; and similarly with respect to the five-year period ended with 1940.

During the earlier period of five years, the average proportion of equity income paid out as common dividends was 86.6 per cent for the four companies and 85.1 per cent for Pennsylvania Water. During the five years ended with 1940, the average for the four companies was 81.8 per cent and the average for Pennsylvania Water was 84.6 per cent.

Thus, there is reason to believe that the average is not affected by any long run change in the dividend policy or practice of the companies represented in the average. Also, in this respect, Pennsylvania Water is generally comparable with the companies represented in the average.

[543] Q. Dr. Foster, where you have used the term "Penn Water" throughout your testimony does that term include the Susquehanna Transmission Company of Maryland? A. It does.

Q. Have you given consideration to factors which, in your opinion, influence or determine the fluctuations and movements of the earnings-price ratios shown by the chart in the exhibit? A. I have.

Q. What are some of those factors? A. For the purpose of analysis, they may be classified generally as:

(1) Those which are related to experienced secular growth or expansion in scale of operations.

(2) Those which are related to the cycle of business [544] prosperity and depression.

(3) Those which arise out of speculative trading in the securities markets.

(4) Those which are related to other events which have a general impact on all enterprises or on all of a class of enterprises.

(5) Those which are related to events which have a special impact on the particular utility.

I attach no significance to the sequence in which these categories have been stated.

Q. What do you mean by the factors which are related to expected secular growth or expansion in scale of operations? A. Commitments of capital are made in the expectation and hope of realization of income and the amount of capital committed by investors represents a capitalization of the income which they estimate to be in prospect. It is generally understood that either a sustained secular growth or a planned major expansion in scale of operations typically results in fuller utilization of the existing productive capacity of electric utilities. As the result of such growth, the returns on the previously existing investment tend to be higher than the past returns.

Q. What do you believe to be the effect of these factors on the behavior of the earnings price ratio curves? A. It is rational to conclude that when such growth or [545] expansion is in prospect, the earnings price ratios, either for a particular common stock or for a class of common stocks, will be at a lower level than otherwise would be the case. The true capitalization rate is the ratio between the prospective income, which may or may not be estimated by investors with precision, and the price which the investors are paying in the market for that prospective income. The earnings price ratio, as commonly stated and as stated for

the purpose of the chart, is the ratio between the past, lower earnings per share and the market price established in anticipation of higher earnings.

Q. Have there been times within the total period shown by the chart when there was the prospect of significant growth or expansion in the operations of the companies represented on this chart? A. Undoubtedly. The businesses of producing and distributing electric power were businesses of almost continuous and of rapid growth, at least prior to 1930. A note on the chart within the space representing the year 1912 indicates that the gross revenue of the six companies represented in the average, but omitting Consolidated Gas of New York because its gross revenue figures are not available for this period, doubled in the five-year interval from 1907 to 1912. Somewhat similar rates of growth were sustained for the five-year period ended with 1917, 1922 and 1927. The rate of [546] increase during the later years is indicated by the fact that the gross revenues of the six companies for 1937 was 29 per cent in excess of their gross revenues for 1932.

In the case of Penn Water, the eighth generating unit was not installed and in operation until late in 1914. The earnings per share were only \$0.43 in 1911, \$2.19 in 1912, and increased both steadily and rapidly to \$5.53 for 1916 and \$6.45 for 1917. The earnings price ratio of 1.61 per cent shown by Schedule 1 for January, 1912, is obviously meaningless as a measure of the ratio at which Penn Water equity investors, as at that date, were capitalizing the income which was in prospect. The average market price of the common stock in January, 1912, was \$63.25. If, for the purpose of illustration, an earnings price ratio is expressed by relating the 1916 earnings per share to the January, 1912, market price of the common stock, the arithmetic result is an earnings price ratio of slightly more than 10 per cent. Of course, as evidence of the capitalization rate, an earnings price ratio derived in this manner should be discounted for the cost of waiting.

Q. What are the characteristics of the factors which you have described as being related to the general business cycle?

A. The general business cycle involves a significant, relatively short run change in the volume of industrial [547] production and in the degree of business and financial confidence as to the future. During periods of declining business activity, and of uncertain business confidence, the forecasts of future income are relatively unfavorable. During the opposite stage of the business cycle, when confidence has revived and the volume of production has begun to increase, the forecasts of corporate income tend to become relatively more favorable.

Q. What is the effect of these factors on the behavior of the earnings price ratios?

A. It is rational to conclude that in so far as the influence of these factors is concerned, the earnings price ratios will tend to be higher than the true capitalization rate during periods of declining business activity and a low level of productivity. Correspondingly, the earnings price ratios will tend to be below the true capitalization rate during periods of expanding business activity.

At the time when business activity loses momentum and a loss of business confidence is experienced, estimates of future earnings are revised downward. As this phase of the business cycle progresses, the prospect of recession or depression becomes more definite. The prices of common stocks tend to decline in adjustment to the loss of confidence and the prospective lower income, but only the results of past operations are reflected in the available annual income statements. [548] The earnings price ratio expresses the relationship between the past per share earnings and the market prices which reflect investors' pessimistic appraisals of future income.

[549] When the business cycle progresses to the stage of revival and renewed business confidence, the contrary set of relationships is presented. The market prices of common stocks respond to the more optimistic forecasts of business activity and income. The earnings-price ratios,

as commonly expressed and as expressed on the chart, are the ratios between past earnings and the current market prices.

Therefore, the earnings-price ratios tend to be depressed temporarily to a level below the rate at which prospective income is, in fact, being capitalized in the market.

Q. Have there been times within the total period shown by the Chart when a coincidence existed between business cycle changes and the earnings-price ratio behavior which you have described? A. Yes. For instance, the volume of industrial production increased throughout the year 1936. Earnings forecast undoubtedly were more optimistic than the actual experience for the year 1935.

The earnings-price ratios shown for the various months of 1936 expressed the relationships between past earnings and current market prices, but these market prices were the result of investors' appraisals of prospective income which differed from those reported for prior accounting periods.

Q. Please discuss the significance of the third class of factors which you mentioned as influencing the behavior [550] of earnings-price ratios, that is, speculative trading in the securities markets? A. For the purpose of analysis of capitalization rates, I defined investment as the purchase of an asset on the basis of an appraisal of the value of the hoped-for income from the asset.

Securities are also traded on the basis of expected short run profit from appreciation or decline of market value.

For the purpose of the analysis I have characterized this market motivation as speculative. It is present in its fullest manifestation in the so-called bull markets.

In 1929 when so many persons attempted to take advantage of the opportunities for quick profits, the market prices were quite unrelated to valuations of prospective annual income from the investment.

The call money rate of 15 per cent and outstanding eight billion dollars in brokerage loans, noted by the chart, are indications of the speculative fervor. This 1929 behavior of stock market prices was without inspiration from a rise in industrial production or commodity prices.

With reference to the more recent period, a significant element of speculative motivation has been present in the stock market during the past year. The price increases have been general, in some part without concern for prospective [551] income, and without a high degree of selectivity among opportunities.

Q. To the extent that speculative trading provides opportunity for an enterprise to obtain equity capital at lower cost rates than would otherwise be possible during the bull market, are these lower cost rates an appropriate basis for fixing the fair rate of return to a public utility?

A. I believe not. It undoubtedly is true that during the existence of a bull market, as in 1929 and to some extent today, equity capital is temporarily available at a lower price because of the extreme optimism of investors and the trading without regard to valuation of prospective income.

However, periods of undue optimism and periods of undue pessimism are each relatively short-lived. If service charges were established on the basis of bull market prices, they would be inadequate when market prices of securities are again based primarily upon appraisals of their intrinsic value.

Similarly, if charges for service were established on the basis of bear market prices, they would be excessive, so far as this factor is concerned, when the period of undue pessimism has passed.

Determination of the fair rate of return on the basis of earnings-price ratios, reflecting either extremely pessimistic [552] or extremely optimistic reactions of investors, would introduce an undesirable element of instability into the process of rate regulation. Rates would tend to be reduced because of the temporary availability of capital at

speculative prices in periods of general business prosperity. It would follow, as a matter of consistency, that in the contrary situation, as in 1932 or 1933, charges for service would be increased.

Periods of deep gloom in the stock market do not coincide with periods of productivity and high national income. Therefore, if for the purpose of rate of return determination, the cost of capital is established on the basis of short run evidence, service charges will tend to be high at the very time when the effect on demand and consumer interests would be most unfavorable, and low when national income and consumer demands would support relatively higher charges.

Q. Please illustrate the fourth class of factors described as related to other events which have a general impact on all enterprises or on all of a class of enterprises. A. Perhaps the most significant such event is a change or prospective change in corporate income tax rates.

Corporate income tax rates have been at a high level and these rates are especially significant for electric utilities because of the proportionally large capital investments required. Any substantial change in the tax rate [553] has a substantial effect on equity income.

Q. What, in your opinion, is the effect of this factor on the behavior of earnings-price ratios? A. Again attention must be recalled to the fact that the market prices of common stocks reflect investors' appraisals of prospective income. If, because of events which necessitate increased public revenues, it is generally believed that corporate income tax rates will be raised or if a new tax measure has been enacted by Congress, consideration is given by security analysts to the effect on corporate earnings.

As a consequence of these appraisals, the market prices of stocks will tend to be adjusted to the changed prospects of income. The earnings-price ratios, however, expressed as the relationship between past earnings and the market

prices, do not reflect the reappraisals of anticipated income and tend to deviate from the rate at which that income actually is being capitalized.

Q. Within the period shown by the chart, has a coincidence existed between anticipated tax changes and the earnings-price ratio behavior which you would expect in view of the circumstances?

A. Yes. For instance, the notes in the space representing the year 1941 indicate that higher income taxes were urged early in 1941 and that the Revenue Act of 1941 was [554] enacted in October of that year.

The chart also shows that the Penn Water earnings-price/ratio moved from about 9 per cent for January to about 12.5 per cent for December, and the average of earnings-price ratios of the six companies moved upward during 1941 from 7.7 per cent to 10.6 per cent.

It would be irrational to assert on the basis of this evidence that there was a corresponding movement in the rate at which prospective income was being capitalized by investors.

So far as the evidence demonstrates to the contrary, the income which was considered to be in prospect after the higher taxes may have been capitalized at the same rate as had been applied in valuing earlier estimates of equity income.

The average market price of the six common stocks fell from 141 in January to 97 in December, but the anticipated effect of the higher taxes was not yet reflected in reported earnings.

[555] It is true, of course, that the contract of Penn Water with Consolidated of Baltimore provides, in conjunction with the company's other operating revenues, for payments to Penn Water which produce a fixed return after taxes.

It appears, however, either (1) that this contractual provision has not been fully understood by investors, (2) that its significance has been discounted, or (3) that its influence on investors' appraisals of prospective stability

and assurance of return has been fully offset by other factors.

Q. Is there reason to believe that behavior of the earnings-price ratios is affected in a contrary manner when there is a general expectation of tax reductions? A. Yes. An anticipated tax reduction of importance, such as removal of the war-time excess profit taxes, results in re-appraisals of the values of the shares being traded. Market prices tend to increase because of the anticipated increased earnings per share. The earnings-price ratios, expressed as the relationship between past earnings and the current market prices, tend to decline to a level below the rate at which prospective income actually is being capitalized in the market. The chart calls attention to the fact that the favorable progress of the war provided reason for the hope and expectation that the burden of the war-time taxes would be lifted in whole or in part. During the last half of 1945, attention was turned to specific proposals for tax [556] revision. The general rise in the market prices of common stocks, which carried the average for the group of six from 113 in January, 1943, to 179 in December, 1945, undoubtedly was related in a special and significant manner to the anticipated effects of tax changes thought to be in prospect. Earnings-price ratios shown by the chart are expressed as the relationship between the market prices and past earnings. Without adjustment, earnings-price ratios for recent months are misleading and invalid as evidence of the equity capitalization rate.

Q. The fifth and last category of factors which you identified included those related to events which have a special impact on the particular company. Please define this category more explicitly. A. I referred to events which influence the behavior of the earnings-price ratios as distinguished from the capitalization rates. I did not refer to events or changes which influence investors' appraisals of the risk present in a particular investment, such as changes in markets, competition, or other characteristics

which determine the return hoped for to compensate for the risk of loss. A considerable number of the unique events, which affect the validity of the earnings-price ratios as a measure of the capitalization rate, may be adjusted for in stating the earnings per share and have been adjusted for in the preparation of these data. The non-recurring transactions within the past accounting period may [557] be given either exact or approximate quantitative expression. Adjustments are not readily made for other events which have a special impact on the earnings of a company. They result in deviations of the earnings price ratios from the true capitalization rate.

Q. Can you illustrate by reference to the Penn Water curve on the chart? A. An obvious illustration is found in the upward bulge of the Penn Water earnings-price ratios, beginning with September, 1944, the date of the initiation of the rate proceeding by the Federal Power Commission. That is, the decline in the price of the Penn Water common stock and the corresponding rise in the earnings-price ratios coincides with the initiation of the rate proceeding.

Schedule 1 shows that the earnings-price ratio moved from 7.71 per cent in June to 9.28 per cent in October, 1944, a difference of 1.57 per cent. The market price reflected the valuation of future income, whatever the assumption as to the amount of that income.

To the extent of the revision of investors' expectations, the earnings-price ratios immediately following the date of initiation of a rate proceeding are invalid as measures of the capitalization rate.

Earnings-price ratios, established in contemplation of a possible rate schedule revision, are not proper measures of [558] the appropriate changes in the price of service.

Q. Do the several factors, which influence the behavior of earnings-price ratios and cause deviations from the true capitalization rates, each exert their influence in the same direction in any one time? A. No. They may exert their

influence in opposite directions. The earnings-price ratio behavior is the product of a complex composite of influences, although a particular factor or event may exert a dominating influence within some time intervals.

Q. Have you, as the result of your analysis, reached a conclusion with respect to the equity capitalization rate which, as a component of the equity cost rate, is a component of the experienced cost of capital to Pennsylvania Water & Power Company? A. I have.

Q. What, in your opinion, is this equity capitalization rate? A. 8.5 per cent.

Q. In addition to the general considerations to which you have testified, are there more specific tests which you have applied in reaching this conclusion? A. I have given consideration to the average level of the Penn Water earnings-price ratios and those representing the six other common stocks during the period since August, 1939. [559] I also gave consideration to evidence of the extent to which the adjustment of 1945 reported earnings on the basis of the 1946 tax rates would affect the evidence of capitalization rates.

Q. Why did you determine the average for the period from August, 1939, to the end of 1945? A. Within the general cyclical movement of the earnings-price ratios, August, 1939, was the last preceding low for the average of six.

Q. How did you determine the average of the Penn Water monthly earnings-price ratios over this period? A. I first determined the average deviation of the Penn Water earnings-price ratios from the average of the six for the period August, 1939, to August, 1944, inclusive. I then assumed that in September, 1944, and subsequently, the Penn Water earnings-price ratios maintained the same position in relation to the average for the group of six, as had been typical of the preceding 61 months. After this adjustment to eliminate the effect of the upward bulge of the Penn Water earnings-price ratios subsequent to Au-

gust, 1944, the average for the entire period from August, 1939, to December, 1945, inclusive, was 8.51 per cent.

Q. What was the proportion of gross income available to the Penn Water equity during recent years? A. Schedule 2 shows that the percentage of gross [560] income available to the common stock for the period from 1939 to 1945, inclusive, varied from 70.7 per cent to 72.8 per cent.

Q. Among the electric utilities generally, what is the typical relationship between equity capitalization rates and proportions of gross income available to the common stock?

A. The rate at which prospective income is capitalized tends to be lower when the common equity in gross income is large and tends to be higher when the common equity in gross income is relatively small. Expressed by reference to the coverage of preferred stock and senior requirements, the equity capitalization rates vary little through the range where prior requirements are earned more than three or four times, and tend to increase sharply as the coverage of prior requirements declines to the point where the prior requirements are just earned.

Q. Do investors' appraisals, which are the available evidence of capitalization rates, reflect the experienced division of gross income between prior requirements and income available for the common stock? A. Yes.

Q. What would be the effect on the capitalization rate if the gross income of the company were to be reduced?

A. The effect would depend, of course, upon the amount of reduction in proportion of gross income available as equity [561] income. According to the typical relationship, the capitalization rates would tend to increase with a decline in the equity income.

Q. Did you give consideration to this factor in arriving at the capitalization rate of 8.5 per cent? A. I recognized the existence of the factor but did not attempt to give it quantitative expression and have not adjusted the 8.5 per cent because of this factor.

Q. What has been the proportion of reported available earnings paid out as common dividends during recent years? A. Schedule 2 shows that the dividends earnings ratios for the period from 1939 to 1945, inclusive, varied from 78.9 per cent to 85.8 per cent. The average during this period of seven years was 83.4 per cent.

Q. What is the typical relationship between equity capitalization rate and the proportion of available income paid out as dividends? A. The typical relationship among electric utilities is that the capitalization rates are relatively lower where a large proportion of available income is paid as dividends and are relatively higher where a smaller proportion of available income is paid out. In general, income received as dividends is capitalized by investors at one rate and income withheld from distribution is capitalized at a different and much higher rate.

[562] Q. Do investors' appraisals of the Penn Water common stock, which are the available evidence of the capitalization rate, reflect the experienced practice with respect to proportion of equity income retained in the business?

A. Yes.

Q. Should the fair rate of return allowance be sufficient to permit some part of income to be passed to the surplus account? A. I believe so.

Q. Is there a typical relationship between the pay-out ratio and the per cent of gross income available for the common stock? A. Yes. Among public utilities the proportion of equity income retained tends to increase as the proportion of gross income available for the equity narrows. That is, as a matter of managerial judgment, or regulatory requirement, the proportion of available income passed to the surplus account and retained in the business tends to increase as the common stock participation in gross income narrows.

Q. Have you given consideration to this factor in arriving at the 8.5 per cent? A. I recognized the existence of the factor but did not attempt to give it quantitative

expression and have not adjusted the 8.5 per cent accordingly.

Q. Have you given consideration to the cost of equity [563] financing? A. Yes. I have prepared analyses of the financing cost experienced by public utilities and by other types of enterprises over a substantial period of time.

Q. What margin have you added to the capitalization rate of 8.5 per cent to represent cost of financing? A. .75 percent. This margin is equivalent to a little less than 9 per cent of the net proceeds of the equity financing. It is equivalent to a discount of 8.1 per cent from the market price to cover underwriters' discounts and commissions, expenses and a small cost margin between the price at which a small number of shares is sold in the market and the price at which a large amount of stock could be sold.

Q. What is your conclusion as to the equity capital cost rate for the purpose of a determination of the experienced cost of capital to Penn Water? A. 9.25 per cent.

Q. Have you made a calculation to establish the experienced cost of debt capital to Penn Water? A. I have.

Q. Does Schedule 4 show this calculation? A. Yes. It shows computations establishing the annual cost of the capital obtained by Penn Water from sale of the mortgage bonds now outstanding. The annual costs are expressed as percentages of the net amount of capital so [564] obtained.

Q. What is the effective average cost rate? A. The effective average cost rate to maturity on the debt capital as at December 31, 1945, is 3.505 per cent.

Q. From what source did you obtain the information with respect to debt discount and expense, premiums received and the other information required for the purpose of this computation? A. It was supplied by Pennsyl-

vania Water & Power Company and, I understand, was obtained from the accounting records of the company.

Q. What is the identity of the bonds whose costs are reflected in the cost rate of about 3.5 per cent? A. The bonds outstanding at December 31, 1945, are the $3\frac{1}{4}$ per cent series, due 1964, and the $3\frac{1}{4}$ per cent series, due 1970.

The $3\frac{1}{4}$ per cent series, due 1964, was issued in 1939 to provide for redemption at maturity of the 5 per cent series due 1940. No costs related to the 5 per cent series of 1940 are included for the purpose of determining the annual cost of debt capital as at December 31, 1945.

The $3\frac{1}{4}$ per cent series, due 1970, was issued in 1940 for the purpose of refunding $4\frac{1}{2}$ per cent series, due 1968, which had been issued in March, 1928, March, 1930 and March, 1931. The issue of March, 1928, in the principal amount of [565] \$6,000,000 was for the purpose of refunding the Holtwood Power Company Series A 6 per cent bonds which had been issued in October, 1924, and the $5\frac{1}{2}$ per cent series A bonds which had been issued in November, 1923, and July, 1924.

Therefore, the costs related to the bonds of the $5\frac{1}{2}$ per cent series A, due 1953, and the Holtwood Power Company series A 6 per cent bonds, due 1954, are stated in the first part of Schedule 4.

This computation is followed by a statement of the costs related to the $4\frac{1}{2}$ per cent series, due 1968, with totals provided in the final column for the three issues of this series. The costs related to the $5\frac{1}{2}$ per cent series A bonds and the Holtwood Power Company series A 6 per cent bonds, which were unamortized at the time of refunding, are shown as Item 19, and included as Item 24 in the computation of the net proceeds from the March, 1928, issue of the refunding $4\frac{1}{2}$ per cent series.

Finally, Item 50 of the computation shows the net proceeds from the $3\frac{1}{4}$ per cent series, due 1964, and the $3\frac{1}{4}$ per cent series, due 1970. Item 49 is the unamortized costs in the amount of \$1,375,600, which is carried forward in

the computation of the net proceeds from the refunding issue.

Q. What method of computation did you use in arriving at the effective cost rate of approximately 3.5 per cent?

A. I computed the cost rate to maturity by using a [566] standard bond table. The borrower has at the maturity of the debt liability equal to its principal amount. It must provide out of income any deficiency of the capital supplied, as measured by the net proceeds, from the liability at maturity. A bond table is designed so that the amortization of any difference between principal amount and price, or, as used here, net proceeds, takes place according to a mathematical relationship which makes the yield, or cost rate, constant throughout the life of the bonds.

Q. Has this computation been consistent with your definition of experienced cost of debt capital as including all the costs of redeeming outstanding securities or eliminating excess contracts, in order to give the company access to lower capital costs or more favorable terms? A. I believe so. In order to determine the effective cost rate of the capital obtained by means of refunding bonds, it is necessary to take into account the costs of getting rid of the less favorable issues previously outstanding, and also that portion of the discounts and other costs of the issue of the outstanding bonds which, at the date of issue of the refunding bonds, would not have been recovered from income.

Q. Have all the costs of calling old bonds and all the unamortized debt discount and expense related to the refunded bonds been included among the costs of debt capital as at December, 31, 1945? [567] A. No. Since the refunding $4\frac{1}{2}$ per cent bonds, issued in March 1928, provided funds equivalent to only 94.3 per cent of the cash costs of the redemption of the old bonds, other sources of cash were utilized, presumably general treasury cash. Therefore, I assigned to the cost of the debt capital repre-

sented by the $4\frac{1}{2}$ per cent series, due in 1968, 94.3 per cent of the costs of calling the refunded bonds and a like proportion of the unamortized debt discount and expense at the time of the sale of the refunding bonds. On this basis \$638,800 of the amortizable burden was transferred to the refunding issue and the balance of the cash requirements of refunding \$345,800, is assumed to have been met by equity funds.

Q. Have you made a calculation to establish the experienced cost of preferred stock capital to Penn Water?

A. I have.

Q. Does Schedule 5 show this calculation? A. It does. It shows the percentage relationship between the annual dividend requirements of the outstanding preferred stock and the net proceeds to the company.

Q. What is the effective cost rate? A. 5.21 per cent.

Q. From what source did you obtain the information with respect to experienced cost of financing and net proceeds? A. It was supplied by Penn Water and, I understand, was obtained from the accounting records of the company.

[568] Q. Have you combined the experienced cost rates for the debt and preferred stock capital and the equity capital cost rate to determine the overall experienced cost of capital to Penn Water? A. I have.

Q. Is this computation shown by Schedule 6? A. It is.

Q. What is the overall experienced cost rate as thus determined? A. The computation shows 6.04 per cent or about 6 per cent.

Q. How have you stated the amount of debt capital for the purpose of this computation? A. The amount of debt capital, as at December 31, 1945, is the net proceeds as at that date from issuance of the original principal amount of the bonds now outstanding, as shown by Schedule 4, less the proportional part related to bonds redeemed by operation of the sinking funds.

Q. You have stated the amount of preferred stock capital for this purpose as the net proceeds shown by Schedule 5? A. That is correct.

Q. How have you stated the amount of equity capital for the purpose of this computation of the overall experienced cost rate? [569] A. I have eliminated from the book statement of total capital the consolidated net amount proposed to be transferred to surplus and to be retained in Account 107 as at January 1, 1937 by the companies' original cost reports to the Federal Power Commission, filed in accordance with Instruction 2-D of the Uniform System of Accounts.

The net proceeds from debt and preferred stock capital as at December 31, 1945 is then deducted from this adjusted total capital to obtain the statement of equity capital in the amount of \$16,349,900.

Q. How then have you combined the cost rates applicable to debt preferred stock and common stock capital? A. I have combined these rates in proportion to the amounts of capital supplied by investors of the three classes.

Q. In your opinion is the experienced cost of capital, the rate of about 6 per cent, a measure of the rate of return which is fair and reasonable for Penn Water?

A. Not necessarily. I can have an opinion as to whether or not it is a reasonable rate of return only as the result of considering the return which would be provided by its application to a rate base and by considering the annual return which would be provided by application of the investment cost and competitive cost bases of rate regulation.

Q. Have you made a study of the replacement cost of [570] capital rate and of the return which would be available on the replacement or competitive cost bases? A. Yes. I have made a study of the replacement cost of capital to Penn Water, and, assuming an original cost rate base, have used the replacement cost rate in relation to an estimate of the cost of constructing a plant of up-to-date tech-

nological design capable of supplying the service which is being supplied by the existing plant, and other evidence of the effect of price level changes, as tests of the reasonableness and adequacy of the return allowance.

Q. In preparing this estimate of the replacement cost rate, have you assumed for the purpose the existence of a going concern? A. I have. The hypothetical costs are assumed to be those which would be incurred by a going enterprise with established credit, which has access to supplies of equity capital and which, therefore, is able to obtain debt capital in the proportions assumed.

The estimate of replacement cost, made here only for the purpose of providing criteria of the range within which the reasonable return is to be found, gives no consideration to the cost of achieving the status of a going concern.

It neglects the advantages available in the competitive economic system to the established enterprise as against the [571] new competitor, who, having the advantage of freedom from past contractual arrangements for capital, must assume the developmental and related costs of becoming a going concern.

MR. SPARKS: Mr. Examiner, I have a document entitled "Pennsylvania Water and Power Company, Replacement Cost of Capital, Evidence of the Fair Rate of Return in Relation to an Original Cost Rate Base", and ask that this document be marked for identification as Exhibit 30.

TRIAL EXAMINER: The document may be so marked.

(The document above referred to was marked Exhibit 30 for Identification.)

By MR. SPARKS:

Q. Dr. Foster, you have before you a document which has been marked for identification as Exhibit 30, and entitled "Pennsylvania Water and Power Company, Replacement Cost of Capital, Evidence of the Fair Rate of Return

in Relation to an Original Cost Rate Base", and I ask you whether this document was prepared by you or under your direction? A. It was.

[574] Q. Dr. Foster, what is the purpose of the first schedule which is called "Schedule 7, Yields on Pennsylvania Water and Power Company $3\frac{1}{4}$ per cent Bonds and Moody's Index of Yields on 'AA' Public Utility Bonds"?

A. The purpose of Schedule 7 is to provide a basis for estimating the rate at which the interest return on the Penn Water bonds is capitalized.

Q. What have been the yields on the Penn Water bonds? A. The Penn Water $3\frac{1}{4}$ per cent bonds, Series of 1964 and 1970, are widely distributed in ownership and are admitted to unlisted trading on the New York Curb Exchange.

The Series of 1964 was offered at about December 22, 1939, on a yield basis of 3.02 per cent and on the basis of a cost rate to the company of 3.20 per cent.

The Series of 1970 was offered at about January 24, 1940, on a yield basis of 3.00 per cent and on the basis of a cost rate to the company of 3.14 per cent. The cost of financing margins thus were .18 and .14 per cent.

These bonds were rated "A" by Moody's, but for a period of several years subsequent to their issue the yields of these bonds at their market prices fluctuated closer to Moody's index of yields on "AA" bonds.

The Penn Water Series of 1964 is now callable at 105.5 per cent of its principal amount and the Series of 1970 is [575] now callable at 106.5 per cent of its principal amount.

The yields on bonds comparable in quality have declined appreciably below the yields at prices equivalent to these call prices.

Although there are few, if any, instances of $3\frac{1}{4}$ per cent bonds of electric utilities having been refinanced, it is, nevertheless, reasonable to assume that the possibility of redemption is a reason why the yields on the Penn Water

bonds have not followed the downward movement of yields on other public utility bonds of high quality.

It is possible that other factors have had an influence, but I have neglected them.

Q. What do you conclude from this analysis? A. I conclude that the average yield on Moody's "AA" bonds during the year 1945, or 2.67 per cent is better evidence of the capitalization rate than the yields on the Penn Water bonds.

As shown by Schedule 7, the average yields on the "AA" bonds for the years 1940, 1941, and 1942 were between the yields on the Penn Water Series of 1964 and Series of 1970.

The average for 1945 was .07 per cent below the average for the Series of 1964 and .13 per cent below the average for the Series of 1970.

Q. Have you neglected the yields which have been experienced in the market during the first three months of [576] 1946? A. Yes. After remaining relatively stable for a period of about five years, interest rates declined sharply during the first months of 1946. Several electric and gas utilities have refinanced at these lower rates.

It is too early, however, to know whether or not the lower rates are more than temporary. The prices experienced during so short a period, whether at low or high levels, are objectionable for the purpose of utility rate regulation unless they clearly represent a trend which may be expected to continue during a significant future period.

Q. What is the purpose of Schedule 8? A. Schedule 8 provides a list of what I believe to be all bond issues by electric and electric combination utilities which were offered publicly during the year ended March 31, 1946. It shows the yields at the offering prices of these bonds and shows the cost rates experienced on the basis of net proceeds to the company.

These and the related data are identified by the titles of the numbered columns 1 to 12, inclusive. The purpose

of the compilation is to provide information which is significant in relation to an estimate of the cost of replacing the debt capital of Penn Water.

Q. What are the sources of these data? A. The bond issues were identified by review of the periodic [577] reports by Moody's. Excepting a few instances, which are identified by the footnote "g", the information with respect to proceeds and prospectively available income was obtained from the offering prospectuses.

In the several instances for which the prospectus was not readily available, these data were obtained from Moody's Public Utility supplements.

The income statements provided by Moody's reports at about the time of an issue of securities, are obtained generally by that organization from the registration statement or from the prospectus.

Q. What is the purpose of the tax adjustment described by the footnote which is related to Column 10?

A. The significant coverage of interest requirements is that provided by prospective income and not the coverage actually experienced during a past accounting period. The income statements prepared at the time of a security offering for the use of prospective investors recognizes this consideration by pro forma adjustments for the effect of the change in coupon rate or in principal amount of bonds.

In view of the significant effect of repeal of the excess profits tax law on the prospective coverage of interest requirements, I have adjusted the reported gross income for the approximate effect of assuming that the 1946 income tax rates were effective during the twelve-months' period [578] for which income was reported in the prospectus.

Q. Have you analyzed the data for the purpose of arriving at an estimate of the yield rate upon the basis of which Penn Water might obtain an amount of debt capital generally equivalent to the amount provided by the existing capitalization? A. I have.

Q. What is your conclusion? A. 2.72 per cent.

Q. What are the characteristics of the data shown by Schedule 8 which you have considered in reaching this conclusion? A. I have considered primarily the yield rates shown by Column 8 and the relationship between these experienced yield rates and the prospective coverage of the interest requirements.

The analysis shows that for bonds of different quality, some relationship with times requirements earned is evident, although the protective margins are generally so large that the effect of the variation in proportion of gross income required for bond interest is not as significant as would otherwise be the case.

Column 11 shows that only one among the thirty-one issues was offered during 1946.

This is the Madison Gas and Electric Company, 2½ per [57½] cent bond, which sold in February on a yield basis of 2.39 per cent.

In reaching the conclusion that 2.72 per cent is the reasonable capitalization rate for the purpose of rate of return determination, I have not, for the reasons which I have stated, given consideration to this recent issue by the Madison Gas and Electric Company.

I have, instead, given particular recognition to the yield rates experienced during August, September, and October of 1945.

Q. Have you given consideration to the provisional ratings assigned by Moody's and shown by Column 12 of Schedule 8? A. The ratings provide a guide which is of some significance, particularly in view of the relationships shown by Schedule 7.

Again omitting the Madison Gas and Electric bonds for the reasons previously stated, Schedule 8 lists eleven bonds which were rated "A" and eleven which were rated "AA". The average yield to maturity at the market price was 2.84 per cent for the "A" bonds and 2.70 per cent for the "AA" bonds.

Therefore, an imputed rate of 2.72 per cent is consistent with the behavior as shown by Schedule 7.

Q. Does Schedule 8 also provide information with respect to cost of debt financing experienced during the recent [580] period? A. Yes. The difference between yield to maturity shown by Column 8 and the cost rate to maturity, Column 9, is the cost of financing spread or margin.

It represents the difference between the selling price to the public and the net proceeds to the company after absorption of the underwriting commission and the expenses incident to the issue.

Q. Have you analyzed these data for the purpose of arriving at the margin appropriately included in the replacement cost of debt capital to recognize costs of financing? A. I have.

Q. What is your conclusion? A. I have added a margin of .06 per cent to the capitalization rate of 2.72, fixing 2.78 per cent as the replacement cost rate of debt capital.

Q. What are the characteristics of the data shown by Schedule 8 which you have considered in reaching this conclusion? A. The cost of financing margin, the difference between the yield and cost rate shown by Columns 8 and 9, varies generally with the size of the issue, the coverage prospectively available for equal and prior requirements and with other evidences of the quality of the bond.

Since the proportion of gross income required for equal [581] and senior issues varies only within the limited range of from 11.8 to 28.4 per cent, it is not to be expected that among these instances the cost of financing would vary significantly with coverage of requirement.

There is, however, a significant relationship with the size of the issue. The financing costs are in some part constant, or fixed without regard to the principal amount of the bonds being issued.

The analysis in relation to principal amount of the several issues shows that a cost of financing margin of .07 per cent is typical for issues in the amount of about twenty million dollars.

In some instances, the rate has been .06 per cent and I have used the lower rate, although it is less conservative.

Q. What is the purpose of Schedule 9 which shows data on preferred stock issues of electric and electric combination utilities during the twelve month's ended with March, 1946? A. Its purpose is to provide information which may be used in estimating the replacement cost of preferred stock capital.

Q. What are the sources of the data shown by this schedule? A. The sources are the same as in the case of Schedule 8.

Q. With respect to the determination of proportion of [582] gross income required for equal and senior issues, did you use the same methods as were used in determining the corresponding information shown by Schedule 8? A. I did.

Q. Have you analyzed these data for the purpose of arriving at an estimate of the yield rate on the basis of which Penn Water might obtain an amount of preferred stock capital generally equivalent to that available under the existing capitalization? A. I have.

Q. What is your conclusion? A. 3.60 per cent.

Q. What are the characteristics of the data shown by Schedule 9 which you have considered in reaching this conclusion? A. I have considered the capitalization rates indicated by the percentages shown by Column 9, the relationship between the yield rates experienced and the prospective coverage of equal and prior requirements and the trends indicated by Schedule 9.

Although the refinancing of senior issues and the refinancing of preferred stock at dividend rates below 4 per cent in the majority of instances has generally improved the coverages available, there is an observable relationship between yield rates and the proportions of gross income [583] required for equal and senior issues. For the reasons previously stated, I have not given any particular recognition to the yield rates of 3.25 per cent and 3.35 per cent

experienced by Iowa Power and Light Company and Central New York Power Corporation in February and March of 1946.

Excluding these two issues, the arithmetic average of the thirteen remaining yield rates is 3.93 per cent. The proportion of gross income required for equal and senior issues, however, is typically larger than would be required on the basis of the existing Penn Water capitalization.

Q. In reaching the estimate of 3.60 per cent, have you given consideration to yield at current market prices of the outstanding preferred stock of Penn Water? A. I have given no consideration to the current yield on the outstanding Penn Water preferred stock. The issue is relatively small in amount and I have been unable to find sale prices or even bid and asked quotations on a basis sufficiently continuous and representative that they afford a measure of investor appraisals of this security.

Of course, even if such market prices were available, the possibility of the stock being called would make the yields at market prices of doubtful validity for the present purpose.

Q. Have you also used the data shown by Schedule 9 for the purpose of an estimate of the cost of preferred stock [584] financing? A. Yes. I have estimated .12 per cent as a reasonable margin, assuming that the amount of preferred stock is limited to the proportion represented in the existing capitalization.

In reaching this estimate, I have considered the cost of financing margins experienced in the instances represented on Schedule 9, expressed as the differences between the percentages in Columns 9 and 10 and the typical relationship between these margins and the size of the preferred stock issue.

Q. What does Schedule 10 show? A. The first section of this schedule shows the replacement cost rates which I have estimated for debt, preferred stock and common stock capital on the basis of the existing capitalization of

Penn Water and the composite rate determined by combining the separate rates in proportion to the dollars of capital supplied under the existing capitalization.

Q. What is the source of the cost rate of 9.25 per cent for equity capital? A. The source is the study represented by the chart and the Schedules 1 to 3, inclusive, of Exhibit 29. It is transferred here from Schedule 6.

[585] Q. What do you mean by "Proportional Division of Income (%)", the title of Column 5? A. The 25.9 per cent is the proportion of gross income absorbed by debt requirements on the basis of the debt capital in the amount of 52 per cent and the related cost rate of 2.78 per cent. This is equivalent to a gross income of a little less than four times debt requirements. After preferred stock and prior requirements are met, the proportion of gross income available as equity income is 70.5 per cent.

Q. On the basis of a capitalization corresponding with the existing capitalization of Penn Water, the estimated overall replacement cost of capital is 5.6 per cent? A. That is correct.

Q. What is the purpose of the second part of Schedule 10? A. Its purpose is to present an estimate of the overall total cost rate on the basis of the capital structure which is most economical under recent market conditions and, at the same time, available to a regulated enterprise of this type as a matter of regulatory and managerial policies.

Q. Why have you assumed 25 per cent equity capital? A. I assumed 25 per cent as the minimum ratio of equity to total capitalization which is generally considered acceptable and appropriate in the light of regulatory and financial [586] standards.

Q. The result of this analysis is an overall replacement cost rate of 4.9 per cent? A. That is correct.

Q. How have you determined the cost rates which in your opinion would be applicable if the hypothetical capitalization were in the proportion indicated? A. I have used the capitalization rates of 2.78 per cent, 3.72 per cent

and 9.25 per cent shown by the first part of Schedule 10 and have adjusted these rates for the effect of the increase in proportion of debt and preferred stock capital and the decrease in proportion of equity capital.

Q. How have you determined the amounts of these adjustments? A. The differences between the cost rates used in the first and second parts of Schedule 10 represent my judgment as to the adjustments required to reflect the change in capital structure. I have given consideration to the relationships between capitalization rates and proportional division of income indicated by the data on Schedules 8 and 9 and also to the relationships indicated by analyses of other similar data.

Q. What are the amounts of these adjustments? A. For the cost of debt capital the adjustment is an increase of 0.5 per cent in the yield rate and no change in the margin for cost of financing. For the cost of preferred [587] stock capital it is an increase of .3 per cent in the yield rate and a decrease from .12 to .08 per cent in the cost of financing spread. For the cost of equity capital the adjustment is an increase of 1.0 per cent in the capitalization rate and no change in the cost of financing margin.

MR. SPARKS: Mr. Examiner, I suggest this as being a good break, if the Examiner should desire to take a recess at this time.

TRIAL EXAMINER: Just before we do that, what is the significance of the term "replacement cost of capital" as you have used it in Schedule 10?

MR. SPARKS: I think the witness explained that, and he can explain it better than I can, your Honor. I should be glad to have him do so off the record, if that would be helpful.

TRIAL EXAMINER: No, it will be on the record. The Examiner had a little difficulty in grasping what the witness was implying, or what he meant to imply by that term. If he would state that.

MR. SPARKS: I will be glad to have the witness restate it.

THE WITNESS: I mean by replacement cost of capital that cost which is currently available on the basis of a hypothetical capitalization and without including any cost related to past financing or cost otherwise experienced by [588] the company.

MR. GOLDBERG: May I ask a question at this point?

TRIAL EXAMINER: Yes.

MR. GOLDBERG: I notice in your answer, Dr. Foster, you related it to a hypothetical situation. I had understood by "replacement cost of money" you had used the coupon rate of bonds which would be issued by Penn Water to refund the presently existing bonds.

THE WITNESS: No, the cost rate is never measured by the coupon rate alone.

MR. GOLDBERG: That is true.

THE WITNESS: Because discount and premium and rate adjustment on coupons subject to that adjustment, and subject to the further adjustment of the underwriting commissions and incidental expenses, I believe you stated the definition correctly.

MR. GOLDBERG: I related my question to bonds and to the same thing—that is, the same thing would apply to the preferred stock and equity capital as you use it in your exhibit?

THE WITNESS: Yes, as a matter of general experience, yes.

[594] By MR. SPARKS:

Q. What is the purpose of Schedule 11? A. Its purpose is to make available estimates of the "Competitive Return" as tests of the reasonableness and adequacy of the

return which would be provided by application of the experienced cost of capital rate to the original cost rate base.

An application of the experienced cost of capital rate to a given rate base, representing either original cost or [595] replacement cost, gives an arithmetic result which should be tested by reference to alternative results determined by rational methods which are consistent with economic behavior. The rational criteria are the costs established by alternative opportunities available to investors at the time the investments were made or the cost established by the alternative opportunities existing at the time the charges for service are being fixed.

[596] TRIAL EXAMINER: You state that the purpose of the exhibit is to make available estimates of the "Competitive Return" as tests of the reasonableness and adequacy of the return which would be provided by application of the experienced cost of capital rate to the original cost rate base.

Where on Schedule 11 do you show your estimate of the competitive return?

[597] THE WITNESS: Several estimates or evidences of the competitive return are shown by Schedule 11 in the several paragraphs numbered Roman II, III, and IV. It is obvious, I think, that the rate of return corresponding to the current competitive return on the cost of constructing the substitute plant capable of providing the same service has a greater economic significance and meaning, and that estimate is treated in the paragraph Roman II-B.

TRIAL EXAMINER: You are referring to the return, not as a percentage? I did not understand part of your answer.

THE WITNESS: No, I am not now referring to the return as an annual return expressed as an amount of money. I now refer to the return in the latter sense.

TRIAL EXAMINER: What element of that is competitive?

THE WITNESS: Both elements—meaning by “elements” the amount of investment required to provide the service to the yield basis upon which that investment would be supplied by investors.

TRIAL EXAMINER: The competitive feature is shown in the per cent, is it not?

THE WITNESS: No. The procedure is one which estimates return by reference to the percentage rate being experienced competitively and currently in the market, and by [598] reference to the amounts required to be invested in order to supply the service. In other words, annual cost of capital is dependent not only upon the cost rate, but upon the amount of investment required. The effort here is to express the annual cost of capital on a competitive basis which is equivalent, of course, to the alternative opportunities currently available to the investor.

TRIAL EXAMINER: But the competitive part of the amount is obtained by applying that percentage figure to the assumed rate base? Is that correct?

THE WITNESS: The amount estimated and reflected in competitive cost is obtained by applying the rate representing the competitive cost of capital currently to a base or amount which also represents the competitive or current costs.

TRIAL EXAMINER: Cost arrived in that manner, because of the introduction of the percentage figure?

THE WITNESS: I do not quite follow you?

TRIAL EXAMINER: Is that because of the introduction of the percentage figure?

THE WITNESS: No; because of the fact that we resort to the competitive basis in order to provide a criterion or test requires that not only the rate be fixed on a current

or competitive basis, but that the principal amount be constant or fixed.

[599] TRIAL EXAMINER: That is, consistent with the percentage?

THE WITNESS: Consistent with the basis upon which the percentage is fixed, or consistent with the theory. If your Honor please, I might attempt to illustrate further by making the assumption that the annual rate which represents the replacement cost of capital, in view of the investors' expectations in the current market is applied not to the cost of replacing the plant but to the original cost, or the amounts actually expended in past years in constructing the plant. That would do violence to the replacement cost concept because it would represent application of the competitive rates and dollars of investment varying from the dollars of investment required to provide a substitute plant both because of the general change in price levels and technological improvements which have taken place.

TRIAL EXAMINER: Very well.

With respect to Schedule 11, and the portions that are now subject to the objection made by Staff counsel, counsel for the company has introduced some element other than the actual legitimate cost of the property in determining the test of reasonableness on the regular return shown on Schedule 11?

MR. SPARKS: Just as the witness has testified.

TRIAL EXAMINER: Yes. The Examiner is going to sustain the objection of Staff counsel.

MR. SPARKS: We take exception to that ruling, of [600] course, if your Honor please, and I now proffer all of Schedule 11 by the following questions and answers—

[602] MR. SPARKS: I might say that the first two questions have to do with first:

Question: Where did you obtain the amount of \$36,704,706 purporting to represent the consolidated original plant as at December 31, 1945?

To which the reply is:

Answer: That figure was supplied to me by the company; and the next question is:

Question: Where did you obtain the working capital estimate of \$977,160 appearing in the same paragraph of Schedule 11?

To which the answer is:

Answer: It was supplied to me by the company.

Question: Where did you obtain the estimated cost of constructing, as of December 31, 1945, a substitute new plant capable of providing the same service, shown by paragraph II (a) of Schedule 11?

Answer: It also was supplied to me by the company.

Question: Where did you obtain the trended cost of construction on physical properties, as of December 31, [603] 1945, appearing in paragraph III (a) of Schedule 11?

Answer: This figure was also supplied to me by the company.

Question: Where did you obtain the statement of nominal dollar investment adjusted for changes in purchasing power of the dollar to 1945 appearing as the first item in paragraph IV (a) of Schedule 11?

Answer: It was supplied to me by Professor H. B. Dorau. I understand that the adjustment has been based upon the Bureau of Labor Statistics Index of Changes in Wholesale Commodity Prices.

Question: What application have you made of the estimate of \$55,394,792 for the purpose of providing a criterion of the reasonableness and adequacy of the experienced cost rate of 6.0 per cent assuming that this cost rate is applied as a rate of return to an original cost rate base?

Answer: Paragraph II (a) of Schedule 11 shows that if the overall replacement cost rate of 4.9 per cent were applied to the estimated cost of a substitute plant, plus the working capital estimate, an annual return of \$2,762,000 would be provided. The paragraph II (a) shows also that a rate of return allowance of 7.3 per cent would be required to provide an equivalent annual return if the rate base were fixed at \$37,680,000.

The \$2,762,000 is an estimate of the return which would [604] be available if full competition is assumed. It represents the cost of capital established by consideration of the alternative opportunities available to investors during the recent past.

Question: What consideration have you given in this connection to depreciation as a negative component of the return or rate base?

Answer: None. I understand that the \$36,704,706 is total original cost, undepreciated.

I do not know whether there is any objection to those questions or not.

MR. GOLDBERG: There is no objection to those questions.

MR. SPARKS: I did not think there would be, Mr. Goldberg.

TRIAL EXAMINER: Proceed.

MR. SPARKS: May that statement be made by the witness?

TRIAL EXAMINER: Yes.

By MR. SPARKS:

Q. Where did you obtain the amount of \$36,704,706 purporting to represent the consolidated original cost of plant as at December 31, 1945? A. The figure was supplied to me by the company.

Q. Where did you obtain the working capital estimated at \$977,160 appearing in the same paragraph of Schedule 11? A. It was supplied to me by the company.

[607] MR. SPARKS: This question has to do with what consideration Dr. Foster has given to depreciation in connection with his use of Schedule 11.

*** I shall continue. To complete the answer to the last question.

A rate of return, otherwise reasonable, applied to this sum as a rate base provides a return which is subject to whatever is the appropriate deduction, or credit to consumers, for employment by the company of the assets reflected in the depreciation reserve balance.

Similarly since the purpose is to test the reasonableness and adequacy of the return which would be provided by such an application, I have given no consideration to depreciation as a negative component in the application of other methods. The results of these other applications are similarly subject [608] to the appropriate deduction, or credit to consumers, on account of the employment by the company of the assets reflected in the depreciation reserve balance.

Question: What is the significance of the computation shown by paragraph II (b)?

Answer: Alternative cost, competitively and currently available, involves replacement of existing capitalization with a hypothetical, available capitalization as well as replacement of existing plant with facilities of modern design capable of providing the same service.

However, for what significance it may have as secondary evidence, I have recognized here the replacement cost of capital rate which corresponds to the existing capital structure of the company. Since the use of this rate is a compromise with the com-

petitive cost concept, I have made in this connection a second and off-setting compromise.

I have added to the original cost figure 42.6 per cent instead of 100 per cent of the difference between original cost and the estimated cost of constructing a substitute plant. The 42.6 per cent is, of course, the ratio of equity capital to total capital represented by the existing capitalization.

The common stockholders, under the competitive cost theory, are not entitled to protection against risk of loss from changing circumstances which affect either the [609] alternatively available capitalization, the investment required to supply service, or the demands for service.

Since the common stockholders assume these risks subject to the contracts with bondholders and preferred stockholders, the statement of competitive costs should consistently recognize the cost established by competitive alternatives.

For this reason, the cost rate of 5.6 per cent applied to the estimated replacement cost of plant may give an unreasonable result. Therefore, I have adjusted the estimated replacement cost of plant by including only the proportion of the difference between original cost and replacement cost which corresponds to the proportion of equity in the existing capitalization.

Question: What application have you made of the trended cost of construction of physical properties for the purpose of making available a criterion of the reasonableness and adequacy of the return which would be provided by applying 6.0 per cent to an original cost rate base?

Answer: Paragraph III (a) of Schedule 11 shows that I have applied the replacement cost of capital rate of 4.9 per cent to the trended cost of construction of physical properties as at December 31, 1945, plus estimated working capital.

The amount of annual return which would be provided on this basis is \$3,106,000, and this annual return would [610] correspond to a rate of return of 8.2 per cent on a rate base of about \$37,680,000.

The result of this application is a test of the reasonableness and adequacy of the return provided by applying a rate of return to the original cost rate base.

Question: Have you in this connection given consideration to depreciation as a negative component of the return or rate base?

Answer: I have not, for the same reason which was stated in discussing the analysis presented by paragraph II (a).

Question: Does the computation shown by paragraph III (b) correspond to that shown by paragraph II (b)?

Answer: It does. It is made in a similar manner and for a similar reason.

Question: What application have you made of the nominal dollar investment adjusted for changes in purchasing power of the dollar to 1945, for the purpose of making available a test of the reasonableness and adequacy of the return which would be provided by applying 6 per cent to an original cost rate base?

Answer: Paragraph IV (a) shows that I have applied the replacement cost estimate of 4.9 per cent to the dollars of investment adjusted for changes in purchasing power of the dollar to 1945 and plus the working capital estimate for the purpose of determining the annual return which would be [611] available on this basis. The result is an annual return of about \$2,500,000 which is equivalent to a rate of return of 6.6 per cent on the original cost rate base.

Question: Does the computation shown by paragraph IV (b) correspond to those shown by paragraphs II (b) and III (b)?

Answer: It does. It has been made in a similar manner and for a similar reason.